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## *SUGAR PRICES JULY 14 TO AUGUST 14, 1909.*

| Date. | 96° Centrifugals per lb. | 96° Centrifugals per ton | 88° Beets per 100 wt. | 88° Beets per ton |
|---|---|---|---|---|
| July 14..... | 3.92¢ | $78.40 | 10s 6d | $84.20 |
| " 16..... | .... | .... | 10s 5¼d | 84.00 |
| " 20..... | 3.935¢ | 78.70 | 10s 5¼d | 84.00 |
| " 22..... | .... | .... | 10s 6d | 84.20 |
| " 23..... | 3.95¢ | 79.00 | 10s 6d | 84.20 |
| " 26..... | 3.99¢ | 79.80 | 10s 6¾d | 84.40 |
| " 27..... | 3.99¢ | 79.80 | 10s 9d | 85.20 |
| " 29..... | 3.985¢ | 79.70 | 10s 7½d | 84.80 |
| " 30..... | 4.015¢ | 80.30 | 10s 9d | 85.20 |
| Aug. 3..... | 4.05¢ | 81.00 | 10s 9d | 85.20 |
| " 4..... | 4.05¢ | 81.00 | 10s 9¾d | 85.60 |
| " 6..... | 4.05¢ | 81.00 | 10s 10½d | 85.80 |
| " 10..... | 4.08¢ | 81.60 | 10s 11¼d | 86.20 |
| " 11..... | 4.08¢ | 81.60 | 11s 2¼d | 87.20 |
| " 12..... | 4.08¢ | 81.60 | 11s 3d | 87.40 |
| " 13..... | 4.08¢ | 81.60 | 11s 2¼d | 87.20 |
| " 14..... | 4.05¢ | 81.00 | 11s 4½d | 88.00 |

## *THE SUGAR MARKET.*

As an illustration of what Hawaii's sugar status would be if it were deprived of the benetfi of a protective tariff and compelled to sell in the open markets of the world, the price of 96° test centrifugal sugar, delivered in New York, with freight and all charges paid, was quoted at 2.36 cents per pound, equal to $47.20 per ton.

WILLET & GRAY, August 5.

On August 4, the total stock of sugar in the United States in Importers' and Refiners' hands, was 297,836 tons, a decrease of 22,146 tons since the preceding week, as against a total of 259,224 tons at the same date in 1908, an increase from last year of 38,612 tons.

ESTIMATED AFLOATS TO THE UNITED STATES from Cuba and West Indies, 25,000 tons; Hawaii, 40,000 tons; Java, 110,000 tons; Philippines, Peru, etc., 20,000 tons. Total, 195,000 tons, against 295,000 tons last year.

WORLD'S VISIBLE SUPPLY.—Total stock of Europe and America, 1,880,836 tons, against 1,847,224 tons last year at the same uneven dates. The increase of stock is 33,612 tons, against an increase of 38,884 tons last week. Total stocks and afloats together show a visible supply of 2,100,836 tons, against 2,167,224 tons last year, or a decrease of 66,388 tons.

NET CASH PRICES REFINED.—It is generally understood that the lowest price named for refined here on this date is basis of Granulated, in barrels, at 4.80c. net cash by all refiners.

STATISTICS BY SPECIAL CABLES. *Cuba.*—The six principal ports: Receipts, 2,000 tons; Exports, 11,000 tons; Stock, 131,000 tons, against 80,000 tons last year.

Centrals grinding 5, against 2 in 1908 and none in 1907.

Stocks in the United States and Cuba together of 428,836 tons, against 460,982 tons last week and 339,224 tons last year, an increase of 89,612 tons from last year.

*Europe.*—Stock in Europe, 1,452,000 tons, against 1,508,000 tons last year.

Unsold sugars in Cuba are reduced in quantity to some 60,000 tons, and being generally in strong hands, the holders are not disposed to part with them except at prices close to the value of Javas.

As to Javas, the quantity available for arrival before October 1st appears to be much smaller than anticipated, there having been delay in shipments, caused by wet weather; a private cable just received from Java reports total shipments during June and July of only 108,000 tons against 224,000 tons last year to Europe and America.

Javas for August shipment, which will show an increase in quantity over the earlier exports, are offered at 11s. c. & f.

United Kingdom buyers are bidding 11s. 3d. c. f. i. for San Domingo Centrifugals, the equivalent to 4.05c. landed at New York, which is the present spot quotation here and, naturally, such sugars are disposed of in this market.

European markets are firmer and 2¼d. higher at 10s. 9¾d. for prompt beet on report of cool and wet weather in Europe and low comparative tests of the beets in the fields; the close, however, is easier on latest advices of more favorable conditions in some sections.

Stocks in the United States four ports are being steadily reduced by small receipts and full meltings, but the refiners have ample supplies to meet requirements for several weeks and may be expected to continue their usual policy of providing a good working stock.

The Porto Rico stock estimate is increased 25,000 tons but there is now little left in the Island to come forward.

Louisiana cane and United States beet crops give promise of full outturns.

At the close Cubas for second-half August shipments were sold to the Federal at 2 23/32c. c. & f., equal to 4.08c. landed, and Porto Rico Centrifugals for August shipment at the same price equivalent.

REFINED.—The period of largest consumption of refined sugars has begun and the distribution is large.

The increasing strength of raws is reflected in the tone of the market for refined and, today, the Federal refinery advanced their prices ten points, to basis of Granulated at 4.95c. less 1%; all other refiners still quote 4.85c. less 1%, but may follow with an advance soon.

Refiners are acting conservatively in fixing the prices of refined, the outlook for raws this and next month justifying an advance of 10 to 20 points and yet keep well within the normal difference between raws and refined.

LOUISIANA.—Good rains continue and the cane crop is making rapid progress. Better growing conditions than the warm wet weather of the last few weeks has provided, would be hard to find.

Temperature at New Orleans—Highest, 92°; lowest, 72°.

SAN FRANCISCO.—Receipts from January 1 to July 26:

| | Tons | |
|---|---|---|
| From— | 1909. | 1908. |
| Hawaii | 130,525 | 158,856 |
| Philippine Islands | ..... | ..... |
| Central America | 1,830 | 1,572 |
| Java | ..... | ..... |
| Peru | 1,990 | ..... |
| China, Mexico, etc | 254 | 192 |
| Total | 134,599 | 160,620 |

CUBA CROP.—Figures corrected weekly to August 3, 1909.

| | 1909. | 1908. | 1907. |
|---|---|---|---|
| Stock in entire Island Jan. 1 of old crop—Tons | None | 9,318 | None |
| Estimated crop | 1,440.000 | 961,958 | 1,427,673 |
| Total Supply | 1,440,000 | 971,276 | 1,427,673 |

| | | | |
|---|---|---|---|
| Receipts at United States Four Ports and New Orleans, since beginning of crop.... | 1,215,000 | 812,753 | 1,208,500 |
| Estimated afloat to United States..... | 20,000 | 14,565 | 20,000 |
| Consumption of Cuba Jan. 1 to date..... | 35,000 | 33,000 | 27,500 |
| Export and consumption..... | 1,270,000 | 860,318 | 1,256,000 |
| Balance supply estimated..... | 170,000 | 110,958 | 171,673 |
| Estimated stock in Island this date..... | 150,000 | 85,000 | 146,000 |
| Estimated Total Visible Production to date ..... ..... | 1,420,000 | 936,000 | 1,402,000 |

PORTO RICO CROP ESTIMATE.—*San Juan, P. R.*, July 28, 1909.—The published crop estimates of 281,399 tons sugar production of Porto Rico are short tons; this would mean about 250,000 long tons (2,240 pounds each), which was about the original calculation for this year's crop.

Later estimates, however, indicate a yield of about 225,000 tons for export, to which should be added about 15,000 tons for local consumption or, say, a total production of 240,000 long tons against estimate, early in May, of 215,000 tons output.

BEET SUGAR IN AUSTRALIA.—The government of the State of Victoria has decided to make an effort to revive the beet-sugar industry, which was attempted ten or twelve years ago, but which failed, owing to the lack of experience of those engaged in the enterprise. At that time a factory was built and fully equipped at a placed called Maffra and was afterwards taken over by the government in lieu of the money advanced to aid the industry. This factory is to be used as an experimental concern to encourage and aid in the expansion of beet culture, in order that the field in its turn may enable the factory to put itself upon a commercial basis and ultimately pay its way. Sugar-beet experimental stations are to be started immediately in chosen localities, with government officers in charge of the work.

Officers of the department of agriculture of the State are addressing large meetings of farmers and placing before them proposals to the effect that the government will start a factory under the supervision of an officer of the department of agriculture in 1911 and keep it going long enough to establish the industry and then sell its interest for the sum of money previously advanced, provided that by March next 1,000 acres of beets are sown. The government also undertakes to find labor for thinning and hauling beets to the factory for those who could not do so themselves, at a fixed price per acre, so that growers will know exactly what it will cost them, and to render assistance and advice in the preparation of the land, etc. It is also intended to procure an experienced manager from the United States to take charge of the factory.

It would appear that the proposals of the government are being

favorably received by the farmers in the Maffra district, a large number of whom intend devoting an area to beet cultivation in order to give the project a good trial.

FRANCE, July 21, 1909.—The weather of the week has been abnormal. During the early part the weather was cold, cloudy and rainy, but at the close it showed some improvement, as the sun appeared and it became much warmer. Warm weather is greatly desired by the cultivators, as the long period of cold and wet weather has greatly interfered with the development of all crops. Regarding the beet crop, the effects of the unfavorable weather are being felt more and more. The leaves, of course, are well developed, but the root is considerably backward in growth.

GERMANY, July 23, 1909.—During the last week the weather conditions improved considerably, the rains slackening and the temperature increasing. Only during the first couple of days of the week were high wind and heavy rains experienced in the extreme northern and southern sections. Elsewhere light showers have alternated with sunshine and high summer temperature. The progress of crop growth has been considerable and not only has the leaf development increased but also the weight of the roots, so that the backwardness has commenced to diminish.

HAMBURG, GERMANY, July 26, 1909.—The outlook for the beet root crop is not very satisfactory at the present moment, but favorable weather may change much from now to the midst of October.

AUSTRIA, July 21, 1909.—The warm and sunny weather this week was very favorable for the development of the beets and also for getting in hand the work of weeding, which had gained the upper hand of the farmers. The damage which the previous periods of rain did to the beets, and which is also confirmed by the official reports of the stand of the crop, was so severe that it will require the most favorable weather from this time on to produce even an average harvest in Austria.

HOLLAND, July 21, 1909.—The weather during the week underwent many changes, several fine, sunny days, followed by a cold and rainy period. The conditions improved at the close and the sun is shining again and the temperature is much higher. However, the temperature is below normal, as in this season of "dog-days" one is used to considerably higher temperatures. The progress of the beet crop is fair, but none of the backwardness has been made up. It is hoped that the dry weather will continue for a long period.

EUROPEAN BEET CROP.—F. O. Licht cables from Magdeburg. July 30, 1909: "Weather favorable for the growing crop."
August 3, 1909: "Weather unfavorable for growing crop in some sections."

EUROPEAN BEET CROP.—F. O. Licht's pre-campaign tests made on July 21, 1909, compare as follows with those of previous years:

| | 1909. | 1908 | | 1907 | |
|---|---|---|---|---|---|
| Day of test | July 21 | July 22 | July 15 | July 24 | July 18 |
| Weight of roots with leaves, grams | 688 | 753 | 612 | 758 | 632 |
| Weight of roots without leaves, grams | 132 | 197 | 148 | 176 | 135 |
| Sugar in beet, per cent | 6.14 | 10.30 | 10.40 | 9.32 | 7.60 |
| Sugar in dry matter, per cent | 69.58 | 81.19 | 81.12 | 75.40 | 71.85 |

CONSUMPTION OF SUGAR IN THE UNITED STATES, SIX MONTHS ENDING JUNE 30, 1909.—We give herewith details of the consumption of sugar in the United States for the first six months (January 1 to June 30) of this year, compared with the same period of the two preceding years.

The figures show an increase of 16,018 tons or one per cent., which is smaller than was generally expected.

UNITED STATES CONSUMPTION OF SUGAR, SIX MONTHS, JANUARY-JUNE.

| | | | |
|---|---|---|---|
| Consumption of foreign sugar through Atlantic Ports | 1,025,170 | 917,840 | 932,992 |
| Consumption of foreign sugar through New Orleans | 117,087 | 43,473 | 92,191 |
| Consumption of foreign sugar through San Francisco | 102,000 | 97,000 | 91,894 |
| Total consumption of sugar from foreign countries and Island possessions | 1,244,257 | 1,058,313 | 1,117,077 |
| Louisiana and Texas cane crops consumed. | 141,850 | 201,076 | 99,217 |
| United States beet crop consumed | 208,000 | 320,000 | 250,000 |
| United States maple crop consumed | 5,000 | 5,000 | 5,000 |
| Molasses sugar made in U. S. from foreign molasses | 3,800 | 2,500 | 3,000 |
| Total domestic sugar consumption | 358,650 | 528,576 | 357,217 |
| Total six months consumption of all sugar in the United States from Jan. 1st to June 30th—Tons | 1,602,907 | 1,586,889 | 1,474,294 |

Increase of consumption, 16,018 tons, equal to 1 per cent.

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People interested in raising poultry for pleasure or profit should read the announcement of the Concrete Machinery Co., of Waterloo, Iowa. Hens' nests made of concrete should be free from vermin of every description, and as lice are said to kill more fouls than any disease to which they may be subject, even the hens will appreciate the change.

## *EDITORIAL NOTES.*

### PRINSEN-GEERLIGS' NEW BOOK ON CANE SUGAR.

One of the most important contributions to the literature of "Cane Sugar and Its Manufacture," is the book of the above title, by H. C. Prinsen-Geerligs, of which an English translation from the Dutch original has just been published. Mr. Geerligs was for 17 years director of the Java Sugar Experiment Station.

We are favored by a review of the book by Mr. Noël Deerr, published herewith.

The author refers to Mr. Deer in the preface to the book, in the following complimentary terms:

"The aim of the present work is to compile in one book everything that is known about the chemistry and the technology of the sugar cane and cane sugar manufacture.

"In doing this, the discussion of technicalities relating to machinery has been carefully avoided, because this subject is already sufficiently dealt with in Noël Deerr's work, 'Sugar and the Sugar Cane.'"

Mr. Deerr's high opinion of Mr. Geerligs' book is evidenced by the statement in the review referred to that it "is without doubt one of the ablest expositions of applied technology that has appeared in the last decade."

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The Directory of Plantations, Agents and Managers, published in the Planters' Monthly, has been corrected up to date, so far as is known. Managers and agents are respectfully requested to notify the editor of any inaccuracies or changes, in order that the information may be kept up to date.

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The brief of Mr. Truman G. Palmer, presented to Congress in connection with the tariff bill, printed herewith, is a remarkable summary of the world's sugar status. He "slams" the "expatriated Americans" who have "exploited Hawaii," but like the "Little Englanders" who think that the sun rises and sets in "Lunnon," he has for so many years stood guard over the beet sugar industry of the United States that he looks upon that as the one industry in the world which should be protected, and thinks that any one who does not bow the knee to his golden calf is an enemy of mankind. We can afford to forgive him this little eccentricity, which he has been indulging in for so many years that it has become second nature, in view of the immense fund of valuable information which he has accumulated.

## *HAWAIIAN SUGAR STATISTICS AND STATUS.*

The Hawaiian sugar fiscal year for statistical purposes, begins on the first of October, and ends on the 30th of September.

The reason for making September 30th the end of the Hawaiian sugar year is, apparently, because that is the end of the nearest quarter to the closing of the grinding season of the majority of the sugar mills.

The beginning of the actual grinding season depends somewhat upon the size of the crop and the ripeness of the cane, which in turn depends considerably upon the weather. Very few mills begin grinding before the first of November. Most of them not before the first of December, and by the first of January nearly all the mills are in operation.

There are 48 complete sugar mills in operating condition in the Territory.

In Hawaii, 2,000 pounds of sugar are reckoned as a ton, varying in this respect from almost every other sugar country in the world, the rule being to reckon 2,240 pounds of sugar as constituting a ton.

On the first day of August, inst, 22 of the 48 Hawaiian sugar mills had completed grinding for the season and 26 were still in operation.

Most of the mills still grinding on August 1st, will complete the crop during August or the first two weeks in September. One, possibly two mills will continue to grind right through the year.

The crop of 1907-8, was 521,000 tons, a record to that date.

The preliminary estimate, made in December, 1908, for the crop of 1908-9 for the entire Territory, was 520,000 tons. In May, 1908, this estimate was raised to 530,000. On August 1, 1909, the estimate for the crop of 1908-9 is 535,000.

Up to the first day of July, 1909, there had been shipped from Hawaii, since October 1, 1908, approximately 352,068 tons.

During July, 1909, there were shipped approximately 65,491 tons, making a total shipment for the crop up to the first of August, 1909, of approximately 417,559 tons.

The crop conditions during the winter and spring of 1909 were unfavorable to the current crop in several of the districts, the weather being colder and wetter than normal, resulting in a less growth of the cane and a lower quality of juice than usual. This deficiency has been more than made up, however, in other sections of the Territory and in the improvement of the quality of the cane during the late spring and summer.

The present weather conditions throughout the Territory are very favorable, there being a good rainfall, with warm weather. The exception to the normal rainfall is in the districts of Kau and Hamakua. In Kau there is a considerable shortage of rain,

and in Hamakua, Hawaii, the conditions are dry, although the cane is not yet seriously suffering. The District of Kona, Hawaii, which suffered from a serious drought last fall and winter, is enjoying an unusually favorable season.

Notwithstanding the dry weather in Hamakua, the crop for 1910 and the young plant for 1911 never looked better through the Hamakua and Hilo districts than it does today.

No formal preliminary estimate for the crop of 1910 has yet been made, but the general appearance of the fields and the areas to be cropped are such as to indicate that the crop will not vary materially from that of 1909, while some well informed sugar men think that it may even overrun the 1909 crop.

The strike of Japanese laborers on the Island of Oahu which began in May and which seriously incommoded five of the plantations for a while, has happily ended without any more serious consequences to the plantations than a slight delay in the harvesting of the current crop and in the planting of the crop for 1911.

The price of sugar is good; the passage of the tariff bill retaining the duty on raw sugar at the previous figure and the crop outlook all give indication of a most prosperous sugar year for Hawaii.

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## *COMMITTEES OF THE HAWAIIAN SUGAR PLANTERS' ASSOCIATION.*

The president of the H. S. P. A. has appointed the committees of the Association for the current years, as follows:

**Experiment Station Committee.**—F. M. Swanzy, chairman; Committee on Entomology, E. E. Paxton, F. Klamp; Committee on Plant Pathology, G. F. Davies, J. W. Waldron; Committee on Agriculture, G. H. Robertson, T. H. Petrie.

**Labor.**—E. F. Bishop, chairman; E. E. Paxton, F. Klamp.

**Cultivation, Fertilization and Irrigation on Irrigated Plantations.**—George F. Renton, chairman; E. Broadbent, G. H. Fairchild, W. Weinzheimer and H. B. Penhallow.

**Cultivation and Fertilization on Unirrigated Plantations.**—A. Lidgate, chairman; John Watt, John T. Moir, J. Hind and W. G. Ogg.

**Cutting, Loading and General Plantation Transportation.**—C. C. Kennedy, chairman; K. S. Gjerdrum, W. W. Goodale, C. Wolters and H. P. Faye.

**Manufacture of Sugar and Utilization of By-Products.**—John A. Scott, chairman; James Webster, Geo. Ross, J. R. Myers and John Fassoth.

**Machinery.**—(a) Manufacturing: J. N. S. Williams, chairman; W. Stodart, Andrew Adams, Robt. Hall and Aug.

Ahrens. (b) Agricultural: H. A. Baldwin, chairman; H. H. Renton, Geo. Gibb, Geo. C. Watt and J. Chalmers.

**Forestry.**—H. P. Baldwin, chairman; Albert Horner, J. M. Lydgate, G. H. Fairchild and W. W. Goodale.

**Warehouses For, and Storage of, Raw Sugars.**—E. K. Bull, chairman; B. D. Baldwin, Fred Meyer, J. N. S. Williams, James Gibb.

It is desired that the chairman of each committee communicate with the members of his committee and endeavor to obtain their assistance in presenting their views upon the subject under consideration.

Statements of the experiences and opinions of the men who are contending with the problems involved in the growing of the crops, and the manufacture of sugar, are often of great value. Presenting questions, and the statement of difficulties, sometimes lead to investigations and information which are very helpful.

The reports should be sent to the secretary as early as practicable—not later than October 10th—so that they may be printed and ready for distribution at the opening of the Annual Meeting early in November.

Yours respectfully,

WILLIAM O. SMITH,
Secretary H. S. P. A.

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## *A NEW TREATISE ON SUGAR MANUFACTURE.**

We referred a few months ago to the Dutch edition of this book, and, the English edition having just come to hand, now take this opportunity to offer a more extended review.

As most of our readers are aware, Mr. Geerligs has just retired from the Directorate of the West Java Sugar Experiment Station, a position he had held for upwards of seventeen years; during that time he has published in the Java *Archief* a very large number of articles dealing with all phases of the cane sugar industry; many of these have been reproduced in our contemporary, *The International Sugar Journal*, and have served to introduce him to the English reading public.

The present work of 350 octavo pages contains not only a digest of his own researches, but unites in one convenient volume much of the best work that has been done by other investigators in Java and elsewhere.

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* "Cane Sugar and Its Manufacture," by H. C. Prinsen-Geerligs; Norman Rodger, Altrincham, England. 13 s. post free.

The first ninety pages of this book are concerned with detailed descriptions of the physical and chemical properties of the constituents of the sugar cane, and of their distribution in the plant. This section is very full and contains accounts of the work of Browne and Blouin in Louisiana, of Bonâme in Mauritius, of Pellet in Egypt, as well as that of Kobus, of Went and of Kammerling and of others in Java. Of particular interest are the tables due to Went (p. 58 et seq.) giving the composition of the cane joint by joint at different stages of its growth; of what some people would call *practical information* (the treatment of the whole book is essentially practical and experimental) may be mentioned the section dealing with the effect of arrowing (tasseling in these islands), with the composition of fallen cane, with the deterioration of cut cane, and with the effect of fire on standing cane.

The second part, consisting of pp. 94 to 350, deals with manufacture; the extraction of the juice including a very able section on bagasse as fuel is discussed in thirty-four pages; sixty-six pages are devoted to clarification, including in this term carbonation and filtration; the use of agents other than lime is discussed in fourteen pages. We note here that von Lippmann has collected notices of six hundred and twenty reagents, and Mr. Geerligs remarks in reference to these, "* * * and really the chemicals and the methods recommended are sometimes so irrational that we are justified in regrading every new suggestion with scepticism, and can in most cases prophesy its failure." The concentration of the juice occupies forty-eight pages; curing, wherein is also included an account of the crystallization in motion process, is dealt with in fifty-eight pages. The account of crystallization in motion is very clear and gives what is, we believe, the first connected account of the "Java process." Incidentally in this section, Mr. Geerligs suggests the use of a centrifugal to separate the gums from molasses; such a scheme has already been tried without success in these islands. In this section eighteen pages are devoted to the question of storage and transportation, the conclusions reached regarding deterioration being in line with the work recently done at the Experiment Station of the Hawaiian Sugar Planters' Association.

What is, in our opinion, the chapter of outstanding merit is that dealing with exhausted molasses; in fifty pages Mr. Geerligs discusses this subject, and brings forward in a well reasoned and convincing way his views on this matter; his definition of molasses is *"A hydrated syrupy-liquid combination of sucrose and salts,"* and although his conclusions refer chiefly to Java conditions and have led to some criticism, no one will deny the essential points of his argument and every one will appreciate the skill with which he has devised the experiments upon which his theory is based.

In the original Dutch edition considerable space was devoted to the question of "available sugar" and this matter does not appear in the English version, although this section was evidently written with regard to Java conditions, we sincerely regret its omission, as within our knowledge the principles there established are only too often either neglected or ignored.

A pleasing feature occurring in this treatise is the readiness with which Mr. Geerligs introduces the work of others even when that is a criticism of his own. An instance of this will be found on p. 142 where a discussion on the causes of abnormal purities is given.

In addition to describing processes, Mr. Geerligs criticises them, and in many instances indicates which of the two methods is preferable under given conditions. It is this which adds much to the value of this book, which is without doubt one of the ablest expositions of applied technology that has appeared in the last decade. A word of praise is due to the publishers for the excellent manner in which this book is produced.

NOEL DEERR.

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## Entomological Inspection on Hawaii and Maui.

The annual entomological inspection of plantations was commenced last month, those of Kohala, Hawaii, and Maui being visited. The leaf-hopper egg-parasites still continue to do effective work, leaf-hoppers having been very scarce during the past season, and the damage caused by this formerly serious pest may be considered a negligible quantity.

The cane-borer appears to have been less numerous generally than during the previous season. Some of the mauka fields of the Kohala district have been quite severely attacked by the larvae of the cane leaf-roller moth. Visitations of this nature are not unusual, especially in the higher elevations and during the cool winter months. The larvae of this moth feed naturally upon grasses, the moths frequently migrating from the upper grass-lands to the neighboring and more attractive young cane.

Three or four wasp-like parasites and one parasitic fly are usually very effective in controlling the leaf-roller, especially in the lower areas, but in the upper fields, especially during the cool winter season, these natural enemies do not appear to be so successful in checking the increase of this moth.

F. W. TERRY.

### Pathological Inspections on Maui.

During the months of March and April, 1909, the plantations on Maui were visited by Dr. H. L. Lyon of the Division of Pathology and Physiology. A thorough inspection was carried out, several days being devoted to each of the larger plantations.

Generally speaking, there were no widespread serious diseases, though everywhere some damage was being done. Such a condition, of course, demands constant care and supervision, lacking which the fungi may at any time gain the upper hand.

The "stellate crystal" root fungus was the only one found causing any damage to the cane. On three plantations serious attacks were reported on small areas; by isolating these from the rest of the fields, and giving the affected cane special cultivation and fertilization, it was hoped to get the disease under control. In another case Lahaina ratoons were reported as doing poorly, probably owing to the attacks of this fungus. Fructification of *Marasmius* were found in one locality.

Eleau was responsible for heavy damage on one area on one plantation, and considerable information was gained as to the field characteristics of this affection. In other places only isolated cases were noted.

Eye Spot was reported as abundant in a few spots where it was doing damage that will be noticeable later. Rich soil was noted as favoring the development of this disease. The special use of more than normal quantities of nitrate of soda is advised against in connection with this disease. An extra dressing would probably be of use, *after* the epidemic has passed its height, and when, owing to a change of climatic or other conditions, the cane is beginning to make a recovery. It is also clear that there are certain areas especially liable to Eye Spot epidemics, where it would pay to make a trial of some resistant varieties of cane.

L. LEWTON-BRAIN.

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## HAWAIIAN MOLASSES AS A SOURCE OF ALCOHOL.

Bulletin 28 of the Division of Agriculture and Chemistry contains the results of a study of the possibilities of Hawaiian Molasses as a source of alcohol. This work has been undertaken in anticipation of any possible development of the alcohol industry in these islands. The scope of the bulletin is general rather than specialized, and particular points of interest are held over for further study in the event of the erection of any distilleries.

As a fundamental part of the studies, yeasts were collected from molasses distilleries in Cuba, Demerara, Java, Mauritius, Natal and Peru. Search was also made for indigenous yeasts which might occur on the cane, but all those found were of no economic value.

Estimates are made of the fertilizing value of the residue from distillation.

It is of special interest to note that Hawaiian molasses contain much less fermentable matters than do molasses reported from other countries, estimates based on analyses made elsewhere do not apply to Hawaiian conditions; this is so much so that the present United States revenue conditions are quite inapplicable to Hawaiian molasses, and without modification would prevent the establishment of an industry. The bulletin is thus summarized by its authors:

1. The average content of sugars of twenty-five Hawaiian molasses for the crop of 1908 was 51.68 per cent.

2. Of the sugars, 83 per cent. can be converted by fermentation into alcohol.

3. An unfermentable body, which has the same reducing power on copper solution as glucose, is present to the extent of 6.13 per cent. of the sugars, or 3.17 per cent. of the molasses.

4. The United States revenue regulations governing molasses distilleries is based on an estimated yield of from 80 to 95 per cent. of proof spirit from the molasses. The yields of Hawaiian molasses vary from 62 to 93 per cent., the average being 77 per cent. A modification of the regulations would be necessary before a molasses distilling enterprise could be profitably installed in these islands.

5. Molasses contains a sufficiency of nutrients for the development and action of yeast.

6. Mineral stimulants give no apparent increase in the yield.

7. The molasses contain no non-sugars which have a deleterious action on the fermentation.

8. Aeration shortens the time of fermentation, without any increase in alcohol yield.

9. Attenuation is not as great in molasses of Hawaii as in those of most countries where molasses is fermented, on account of the smaller quantities of sugars therein

10. Fermentation under pure culture increased the yield in alcohol 22 per cent. over that when working under the usual factory conditions with adventitious fermentation.

11. The lees or residue from fermentation gives a fertilizer containing potash, nitrogen, and a small quantity of phosphoric acid.

12. Molasses as a source of alcohol and fertilizer has a

value of about 8.3 cents per gallon, exclusive of freight and interest.

13. Of the yeasts from various countries where the molasses is fermented, most are budding yeasts of the type *Saccharomyces vordermannii*; that from Peru, however, is a fission yeast.

14. Most of the yeasts worked well in sugar concentrations up to 14.6 grams per 100 cc., the fermented wash containing up to 7.85 per cent. alcohol by volume.

15. A *Monilia* was isolated from the yeast from Natal, which gives an aroma resembling that of the best Jamaica rum.

NOEL DEERR.

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## *MR. PALMER'S BRIEF ON THE STATUS OF THE SUGAR INDUSTRY AND THE SUGAR TARIFF.*

Mr. Truman G. Palmer, Secretary of the American Beet Sugar Association, is one of the best informed men, concerning the sugar business, in the world. He also is possessed of a keen power of observation and analysis, and rare ability to assemble the facts which he knows into a convincing argument. Mr. Palmer spent three months last year in visiting the several sugar-producing countries of Europe, and upon his return presented a brief to the Committee of Ways and Means, then formulating the tariff bill now pending before Congress. This brief is a long one—too long to ordinarily be reproduced in the Planters' Monthly; but is so packed full of facts, figures, analyses of conditions, policies, results and conclusions drawn therefrom, that it is almost impossible to leave out any portion thereof without omitting something of interest and value. It not only deals with the subject of Europe and the United States, but deals also with Cuba, Porto Rico, Java, Formosa and the Philippines. It is not only a compact statement of existing facts and conditions, but deals with the subject historically and statistically and quotes the opinions of many of the leading sugar authorities of the day. It is a document to file away for future reference and consultation. No one who wishes to be posted upon the sugar question can afford to omit reading Mr. Palmer's article.

MR. PALMER'S BRIEF.

Committee on Ways and Means,
Washington, D. C.

Gentlemen: At the time the recent sugar hearings were under way before this honorable committee I was in Europe, where I had gone for the purpose of looking into the beet-sugar industry of that country. On November 17, the day

that Messrs. Atkins, Spreckels and Stillman appeared before you, I was interviewing Mr. Henry Millington Drake, the Paris member of the sugar brokerage house of J. V. Drake & Co., said to be the largest sugar brokerage house on the continent, with headquarters at London, Magdeburg and Paris.

I will state in this connection that while I had many letters of introduction to European sugar people of local reputation only, my time was limited and I endeavored to spend it with people who had national or international reputations in the sugar world and whose opinions would carry weight with anyone who might be conversant with the sugar industry.

### OPINION OF WORLD'S LARGEST SUGAR BROKER.

While Messrs. Atkins, Spreckels and Stillman were telling you that freer sugar from Cuba and the rest of the world to the United States would injure no one, Mr. Drake was telling me quite a different story. The following, taken from the notes I made immediately after the interview terminated, throws considerable light on the prevailing sentiment of European sugar authorities:

"Found him thoroughly well posted on world sugar conditions. Says it cost Great Britain £3,000,000 a year by reason of her having brought about the Brussels conference, but it quieted and settled the sugar situation, which was in a nervous condition on account of European bounties on sugar. Says Germany could easily produce a million more tons of sugar per annum, but all European nations and sugar men seem to wish to preserve a normal market. Says that since the Brussels convention the up-to-date cane-sugar people throughout the world have been making money hand over fist.

"So anxious was Great Britain to keep things settled, that to renew the convention and get Russia into it, she allowed Russian-bounty-paid sugar to come into Great Britain free of countervail.

### EFFECT OF REDUCTION OF DUTY ON SUGAR.

Firmly believes that any great reduction of United States duty on either Cuban or Philippine sugar would result in such a demoralization in the sugar world as has never been seen. In reply to my statement that in apparent good faith some prominent Americans contended that to let in a few hundred thousand tons from the Philippines free of duty would injure no one, he said: 'Tell those gentlemen, with my compliments, that they know nothing about it. You have already reached the danger line. You now import but two or three hundred thousand tons of full-duty-paid sugar. Once cut this

off so that you import no full-duty-paid sugar and find your market filled without absorbing quite all the Cuban sugar, thus forcing their surplus onto the world's markets—be it even a few cargoes only—and the markets of the world will go to pieces in a jiffy. A hundred or two hundred thousand tons of Cuban sugar forced upon an already overstocked market, and the world market would slump not less than one-half cent per pound immediately, and probably much more. People who have not studied the question carefully have no conception of the sensitiveness of the sugar market. You can not compare the sugar situation with that of other food products. Of those we can scarcely produce enough to supply the world—of sugar, we could produce enough in one year to supply the world for many years. Each nation in Europe, for economic agricultural reasons, would like to double its sugar product, but in order not to demoralize the market, each is trying to hold its output in check. It is to be hoped that while Europe is exercising the greatest possible restraint on production, in order to maintain living prices, you in America will not upset everything by further stimulating the output of Cuba or the Philippines.'"

My attention was also called to the fact that in December, 1907, the world's sugar statisticians began to lower their estimates of the coming crop and by March, 1908, had cut their estimates by some four or five hundred thousand tons, with the result that during that three-months period the Hamburg price of sugar increased more than 40 cents per 100 pounds, and it was pointed out that if such a cutting down of surplus sugar would raise the price 40 cents per hundred, the converse was true, and an increase of similar proportions in the world's sugar production, with a market already over-supplied, would reduce the world price of sugar probably much more than 40 cents per hundred.

## OPINIONS OF OTHER SUGAR EXPERTS.

Mr. Drake but echoed the sentiments which had been expressed to me by the greatest sugar experts in Germany, Austria-Hungary, France, Belgium and Holland. I had met with it on all sides—government officials, sugar statisticians, editors of sugar papers, raw sugar manufacturers, sugar refiners, sugar brokers, and officers and chemists of the various sugar associations of Europe—thus including the best posted sugar men in the world, when it comes to considering world conditions.

The majority of these men have made the sugar industry their life work, as did most of their fathers before them. They were born and bred in a sugar atmosphere. Three-quarters of the beet sugar of the world, and, in fact, nearly one-half of the world's total output of sugar, is produced in Europe, which is

the only country that produces beet sugar for export. With a limited world market already over supplied, a comparatively small variation in the world crop of sugar makes such a difference in the price of this commodity as to mean vast sums of money to the sugar industry of Europe. Europe's home markets are fully safeguarded by protective tariffs, but when the sugar producers reach out to sell their exports in other markets, they are met with the cheap labor competition of the Tropics. They have seen Java, with no tariff concessions whatever, drive European sugar out of China, practically out of India, and partially out of Persia. A 20 per cent. reduction by the United States to Cuba has been seen to result in making that island the greatest cane sugar producing center in the world. The sugar men in Europe know the almost untold millions of acres of undeveloped cane lands in both Cuba and the Philippines, and their training teaches them that freer trade relations between either of these islands and the United States means an almost limitless increase in sugar production, with a consequent lowering of the world price of sugar. At least that is the way they put it to me, and the statements of people so widely separated being in such accord, one could not doubt their sincerity, even if so inclined.

### FRENCH OPINION ON THE PHILIPPINE TARIFF.

From my notebook I quote concerning one French sugar manufacturer, who evidently knew more about the islands than he did about the actions of our Congress:

"Impossible to believe American Congress would consider lowering duty on Philippine sugar into home country, considering immense possibilities of the Philippines. Really could not believe our public men so unfamiliar with the possibilities of the Philippines, or of political economy, or benefits of beet culture, or so reckless of public opinion, or so daring as to injure so important a home industry. Could not believe any legislator would even introduce such a bill, on account of the ignominy which would thereby cover him. Perfectly amazed and almost speechless when I informed him that a 75 per cent. reduction bill had not only been introduced at each Congress during the last six years, but was passed twice by the lower House. Says the enormous indirect economic advantages of the industry are fully appreciated by the public men and political economists of France."

### ENGLISH OPINION ON PHILIPPINE POSSIBILITIES.

A distinguished English sugar man, who went as a member of the British royal commission to the West Indies to study how their conditions could be improved, told me he looked for

no material increase of sugar production in Hawaii, but looked for Porto Rico to go to 500,000 tons. No material increase in Cuba unless we granted them further tariff concessions.

With Philippine sugar on our free list, he would expect a tremendous exploitation there, which would upset our national revenues, as well as the sugar markets of the world.

To illustrate his ideas concerning the loss of revenue feature, he said that some years ago the British Government decided to allow colonial West Indian sugar to come in free of duty. After the ministry had decided on this measure, one of the ministers asked him what such a policy would cost the British revenues. He told him £1,500,000 per annum, at which the minister was thunderstruck, and called him before the ministry. They told him that on the little West Indian sugar coming in, it would make less than £150,000 difference. He told them yes, on present importations, but if given free trade all the British West Indian sugar would come to Great Britain, and that a great sugar exploitation of the islands would be induced. They saw the point and dropped the plan.

Sir Henry Bergne, now retired, was for many decades in the British foreign office, where he was head of the commercial department and examiner of treaties; was His Majesty's plenipotentiary at the copyright conventions at Berne in 1886 and in 1896; acted in like capacity in 1886, 1890 and 1898 at the industrial property conventions held at Rome, Madrid and Brussels; was the British commissioner at the Brussels sugar conference of 1898; and was His Majesty's plenipotentiary for signature at the international sugar convention at Brussels in 1902. He was knighted in 1903. Sir Henry said that he anticipated no great increase in European sugar production, but that the Philippines and Cuba were capable of a tremendous expansion, and would be so expanded if their sugars were allowed to enter the United States free of duty or if granted further tariff concessions by the United States.

Mr. Phillippe de Vilmorin of Vilmorin, Andrieux & Co., the largest sugar-beet-seed producers in France, expressed the same sentiments as did Sir Henry Bergne.

## POSSIBILITIES OF CUBA AND PHILIPPINES ARE STUPENDOUS.

Dr. Ware, an American residing in Paris, has spent a lifetime in the study of sugar. He has what is said to be the most complete sugar library in the world. His spacious and elaborate study on the Rue de la Bienfaissance is lined on all sides, from floor to ceiling, with nothing but sugar literature, even the doors being shelved to correspond with the balance of the room, so that once in and the door closed no exit is visible. He was the United States juror for awards on sugar, teas and confectionery at the Paris Exposition of 1900. He

estimates that from his private fortune he spent $50,000 many years ago in trying to get the beet-sugar industry introduced into the United States. He has written a two-volume standard history of the beet-sugar industry of the world, as well as several technical sugar books and a standard work on sugar-beet seed, and he edits from abroad a technical sugar paper published in Philadelphia. He says that the possibilities of sugar production in both Cuba and the Philippines are simply stupendous, and that either of them can easily ruin the home industry if given the chance. He says that the Europeans fully realize the enormous indirect advantage of producing their sugar from home-grown beets, the importance of the by-products, the making of better farmers, the better crops of all the other farming products by reason of rotating them with sugar beets. He says that the Europeans feel that if at home they could produce cane sugar at a cost of 2 cents per pound or beet sugar at a cost of 4 cents per pound they would prefer to produce it from beets at the double cost price of the sugar, on account of the far-reaching value of the indirect advantages, as aside from rum there is no by-product in producing cane sugar and not one indirect advantage. In other words, that home-produced beet sugar at a cost of production of 4 cents per pound is actually cheaper for the nation at large than home-produced cane sugar (if it were possible to produce cane sugar there) at a cost of production of 2 cents per pound.

CUBA CAN PRODUCE SUGAR FOR 1¼ CENTS A POUND.

George S. Dureau, editor and proprietor of the *Journal des Fabricants de Sucre,* the leading sugar paper of France, is convinced that free sugar from either Cuba or the Philippines would mean the total extinction of our home beet and cane sugar industries. He reiterated to me his statement of December 18, 1901, and reproduced in the hearings of this committee, that sugar could be produced in Cuba at a cost of 1¼ cents per pound, and added that it is now being produced there at that figure or under. On January 22, 1902, when the Cuban reciprocity treaty was under consideration by this honorable committee, this recognized sugar authority was quoted (p. 168 of the hearings) as saying:

"If Cuban sugar is to enjoy a reduction in the tariff in the United States, it should not be difficult to picture the enormous impetus the Cuban industry would take on."

A week before this opinion was read to you, Mr. Atkins (who again appeared before you a few days ago in favor of further reducing our duties on Cuban sugar) delivered to you this opinion:

"The labor in Cuba is very limited, and I have very strong doubt in my mind whether there is enough in Cuba to cut and take off possibly a crop of 800,000 tons."

Those who have watched the Cuban sugar crop grow from a few hundred thousand to nearly a million and a half tons per annum under the stimulus of our reciprocity treaty with that country can judge as to the weight which should be given to the opinions of these two men.

## PHILIPPINES AND CUBA CAN SWAMP SUGAR INDUSTRY.

Dr. Fred Sachs, of Brussels, secretary-general of the *Société Générale des Fabricants de Sucre de Belgiques,* is the recognized Belgian authority on sugar and one of the greatest sugar authorities in Europe. On account of his vast statistical work in connection with the world sugar production, he has been decorated by his home government with the "Order of Leopold," and for the same reason he has been decorated by the French government. Dr. Sachs is also editor of *La Sucrerie Belge,* leading sugar journal of Belgium, as well as being secretary-general of the *Société Technique et Chimique de Sucrerie de Belgique.* He is a chemist and sugar engineer and is interested in several sugar factories in Belgium and elsewhere in Europe. Dr. Sachs is thoroughly conversant with the sugar producing conditions and possibilities throughout the world and is fearful of the Philippines and Cuba. Quoting from my notes:

"Thinks they would flood us with sugar if we let it into our protected market. Would be like paying a big bounty to countries, one of which, without bounty and with most antiquated machinery and methods, has always been able to compete with the world. Foreign as well as American capital would rush in by many, many millions and demoralize the sugar markets of the world. Believes that with free sugar, or further tariff reductions, Philippines or Cuba would swamp our industry."

## BELGIAN VIEWS.

At Brussels I saw Monsieur Capelle, the Belgian minister of foreign affairs and permanent president of the Brussels convention. I quote from my notes:

"Seemed to be well informed as to possibilities of sugar productcion in the Philippines and Cuba and of the agitation in favor of admitting their sugar to our markets under modified duties or free of duty; also as to the stimulating effect of such action in increasing Philippine and Cuban sugar production. Seemed to think that their possibilities were limitless and that the removal or reduction of our duties on their sugar would result in upsetting the world's sugar market. Said that the matter had been fully discussed and considered at the meetings of the conference."

At the Hague, Mr. Versteeg, the secretary-general of the Netherlands department of agriculture, said to be the best government authority on agriculture, informed me that in Holland the beet-sugar industry was held in the highest esteem by all thinking men, it being of the greatest value to farmers and stock raisers. He intimated that it would be a bold man, or set of men, who would advocate any policy which might result in injury to the home industry. Another official of the department, to whom he gave me a card, accorded me an interview, concerning which I quote from my notes:

"Talked freely of the industry and its great value to Holland farmers. Said no thought would be given to a proposition which might in any way injure the home industry, and thus the Holland farmers, thousands of whom would not know how to turn if deprived of this crop."

## HOLLAND PROTECTION POLICY.

Mr. Barbe, president of the Western Sugar Refining Company at Amsterdam, is the largest sugar refiner in Holland. His company refines from one and one-half to two times as much sugar as is consumed in the entire kingdom of Holland. Mr. Barbe was a member of the Brussels convention. He informed me that he had tried to refine Javan cane sugar, but could not do so at a profit on account of the restrictions placed on it by the Dutch government for the express purpose of protecting the home beet-sugar industry. For the sake of larger dividends he would like to be able to refine cheap Javan sugar, but the beet-sugar industry was a national blessing, which the Dutch government protected by absolutely excluding even the Javan produces, produced by Hollanders in a Dutch possession. He seemed much amused in contrasting our governmental policy toward the home and colonial sugar industries with that of his own country. Quoting from my notes:

"He does not believe we will reduce the duty on either Cuban or Philippine sugar—is convinced that a 50 per cent. reduction on Cuban or free Philippine sugar would be fatal to the home beet and cane industries. Can't believe that Congress would do such a thing."

I quote a paragraph from my notes concerning an interview with Mr. de Bussy, editor of De Indische Mercur, at Amsterdam, a paper devoted to colonial produces, especially Javan:

"Says Philippines can produce great quantities of sugar and are only waiting to get their status settled when large amounts of capital will go into the industry, if settled favorably to them. Exchanges with Philippine papers and keeps track of the industry. Predicts great increase in Formosa. Japanese good workers and work cheaply. Philippine land as good or better than that of Java."

Occupying high places in the sugar industry of Hungary are the Von Hatvanys, both noblemen, both members of Parliament, both political economists of note, and both very wealthy. Three of their estates cover 50,000 acres, and all are equipped with up-to-date sugar factories, the one I visited being a 25,000-acre estate equipped with a factory of 3,000 tons daily capacity, said to be the largest in Europe.

### UNSOUND TO STIMULATE TROPICAL SUGAR.

The Hatvanys, one of whom was a member of the Brussels convention, assume a little different, though none the less significant, position in regard to Cuba and the Philippines from that voiced by other political economists I met. Quoting from my notes:

"They both feel that our affairs with Cuba and the Phillippines and the outcome of it can have little or no effect on the European beet-sugar industry through the dumping of additional large quantities of cane sugar on the English market, as they firmly believe that any further concessions of tariff on these sugars would result in Great Britain closing her doors to them. Their only interest concerns the comparatively small quantity of Javan, Santo Domingan, and other sugars we now consume from tropical countries to whom we grant no tariff favors. They seemed to think that our legislators must surely consider this phase of the question, and would hesitate a long time before taking a step which would precipitate such a condition of affairs."

They were convinced that further tariff concessions to either of these tropical countries would greatly stimulate their production of sugar, and that the United States alone would have to bear the burden of her action, if such action were taken. I suggested that our tariff concession to Cuba was but 34 cents per 100 pounds, while the Brussels convention only provided for countervailing duties in case the gratuity amounted to 50 cents or more per hundred. They called my attention to the recent renewal of the convention, when Great Britain insisted that, notwithstanding the fact that Russia paid liberal bounties, and under the stimulating influence of these bounties had piled up a large surplus of sugar, Russia must be admitted to the convention, surplus and all, and Europe had to submit. They submitted that the laws of the Brussels convention were not the laws of the Medes and Persians, but were flexible and designed to be changed as often as circumstances might dictate, and that our pursuit of a policy that virtually paid a big bounty on certain tropical sugars which we consumed, and thus enabled the producers to dump their surplus on foreign markets at less than the cost of production and still make a profit on their full crop, would not be submitted to. Great

Britain had forced Europe to a fair competition in the British market with British colonial sugars, and she would likewise force us and the sugars we favored, if occasion demanded.

### THE QUESTION OF SUGAR BOUNTIES.

In Paris I was told that one of the considerations which actuated Great Britain in admitting the importation of bounty-paid Russian sugar concerned reciprocal advantages granted by Russia on Russian imports of British India tea. In London I was questioned by an official of the British board of trade (a government institution) concerning the bounties paid by our state governments on the production of beet sugar. I told him that only the state of New York did this, and he said that that was his understanding, but that on account of this other governments had endeavored to get Great Britain to countervail against American sugar, not because we exported any, but as a matter of principle; but that on account of the friendly feeling existing between Great Britain and the United States, Great Britain had declined to do so. He asked me to confirm from official sources my opinion of there being only one state which granted a bounty, and advise him, which I promised to do. I mention this incident to show that the closest scrutiny of the sugar question is being observed, and that further tariff concessions to Cuba or the Philippines would probably result in closing all other world markets to their sugar.

### UNANIMITY OF EXPERT OPINION.

I will not take up the space to quote the expressions of other equally noted people in the European sugar world, but will merely state that their opinions as to the enormous stimulation of sugar production which a further tariff concession to either Cuba or the Philippines would inevitably bring about coincides with those I have taken the pains to quote.

Among these notable people whom I met and with whom I discussed the subject were:

Otto Licht, of Magdeburg, the veteran German beet-sugar statistician whose figures and crop estimates on European beet-sugar are accepted the world over;

Professor Dr. von Lippman, the celebrated German sugar expert, of Halle, said to be the greatest sugar chemist and political economist on sugar in Germany; the author of a standard history of sugar and of a standard work on sugar chemistry; the first sugar refiner in Germany to produce refined sugar without the use of charcoal, and for which discovery he was decorated and made a nobleman; the managing director of a sugar refinery which annually turns out 50,000,000 marks' worth of sugar;

Privy Councilor Koenig, president of the Union Association of German Sugar Manufactures and Refiners;

Dr. Herzfeld, the noted sugar expert, who is in charge of the experimental laboratory of the German Sugar Industry at Berlin, the greatest sugar school in the world;

Dr. Bartins, editor of *Die Deutsche Zuckerindustrie,* the leading sugar paper of Germany;

Mr. Zuckschwerdt, of the great sugar brokerage and banking house of Zuckschwerdt & Beuchel, of Magdeburg;

Dr. Stein, of Liverpool, the technical sugar expert, engineer and chemist employed by the British government and the sugar importers as an arbitrator of disputes on classification of sugar imports, and a director in a large British sugar refinery;

Mr. Czarnikow, of London, the greatest sugar importer in the world, with houses in London, Liverpool, Glasgow, Greenock and New York;

Sir Nevile Lubbock, sugar broker of London, who was chairman of the British royal commission which was sent to the West Indies to study out how their conditions could be improved, and who was decorated on account of his services in this commission, and who was the expert adviser of the British members of the Brussels convention;

British Consul Drake, one of the largest sugar brokers in Magdeburg, and member of the largest sugar brokerage houses on the continent;

Professor Strohmer, chief of the Austria-Hungarian sugar institute, conceded to be the leading sugar expert of Austria, and who believes the sugar world has far more to fear from the Philippines than from Cuba;

Dr. Mikusch, general secretary of the Austria-Hungarian Sugar Association; and editor of the *Wochenschrift des Centralvërines Für Rübenzucker-Industrie,* the leading sugar paper of Austria;

Monsier Dormerque, administrator of the French syndicate of sugar manufacturers; and

Mr. H. C. Prinsen-Geerligs, of whom I will have more to say later.

These and others I met are thoughtful, studious men, men of culture, refinement, education and science, many of them possessors of great wealth. They have devoted their lives to the study of the various phases of this most intricate subject. Largely by their brains and those of their fathers, Europe is being enriched by more than half a billion dollars a year, and has become independent of tropical sugar. They command the highest respect of their monarchs, as is evidenced by the fact that more than one-half of them have been decorated for services rendered the sugar industry. They also command the respect and esteem of their public officials and the people

amongst whom they live. My regret is that they can not appear in a body before this honorable committee.

WORLD'S BEET SUGAR PRODUCTION AND EXPORTATION.

| Country. | Number of factories, 1906-7. | Production metric tons (2,204 pounds), 1907-8. | Average sugar production per factory in metric tons. | Exports metric tons (2,204 pounds), 1906. |
|---|---|---|---|---|
| Germany | 369 | 2,223,521 | 6,026 | 1,098,835 |
| Austria-Hungary | 201 | 1,409,357 | 7,012 | 740,258 |
| Russia | 277 | 1,403,300 | 5.066 | 93,854 |
| France | 255 | 719,900 | 2,823 | 280,306 |
| United States | 63 | 420,715 | 6,678 | ..... |
| Belgium | 82 | 231,499 | 2,823 | 210,062 |
| Holland | 28 | 173,103 | 6,182 | 161,596 |
| Italy | 35 | 150,223 | 4,292 | ..... |
| Sweden | 20 | 109,500 | 5,475 | ..... |
| Spain | 33 | 106,000 | 3,212 | ..... |
| Denmark | 7 | 52,700 | 7,529 | ..... |
| Roumania | 5 | 21,100 | 4,220 | ..... |
| Canada | 3 | *a* 12,500 | 4,167 | ..... |
| Switzerland | 1 | 3,370 | 3,370 | ..... |
| Bulgaria | 1 | 3,080 | 3,080 | ..... |
| Servia | 1 | ..... | .... | ..... |
| Greece | 1 | 2,088 | 2,088 | ..... |
| Total | 1,382 | 7,041,956 | *b* 5,033 | 2,584,911 |

*a* Estimated.

*b* General average.

German figures by Otto Licht, Magdeburg. All other figures, except exports, by Fred Sachs, Brussels. Export figures, except Germany, by United States Department of Agriculture.

SUGAR BEET AREA, EUROPE AND THE UNITED STATES.

About one-half of the sugar of the world is produced from European sugar beets which are grown from as far south as Spain, Italy and Greece to a point as far north as the Russian province of St. Petersburg and an equally northern latitude in Sweden.

From east to west there are, of course, no climatic limitations, and spread out from the Atlantic to a point far into Russia there are over 1,300 beet-sugar factories, and the industry is now spreading into the Chinese province of Manchuria.

The corresponding latitude in America covers all the territory in the United States north from Norfolk, Va., on the east and Santa Cruz, Cal., on the west, as well as a goodly portion of Canada. However, owing to our mountain ranges the beet-sugar territory dips from northeast to southwest, and in southern California several hundred miles south of Santa Cruz there are produced the richest sugar beets in the world.

It would thus appear that with a strip of country nearly 800 miles wide and 3,000 miles long lying within the latitude

in which Europe produces sugar beets there is no limitation as to the amount of sugar which we can produce from this humble vegetable.

## THE BRUSSELS AGREEMENT AND THE CONCLUSIONS OF EUROPEAN SUGAR MEN CONCERNING FUTURE SUGAR PRODUCTION IN EUROPE.

The direct and indirect benefits brought about by sugar-beet culture are so great and so generally recognized in Europe that for a number of years prior to 1903 their large sugar-producing countries were engaged in a maddening scramble to increase their production. Realizing these enormous benefits, one government after another joined in paying larger and larger bounties on export sugar. The sums so paid out in bounties amounted to untold millions, and resulted in Great Britain securing her sugar at far less than the cost of production. While this was a most satisfactory situation for the manufacturers of confectionery, jams, jellies, preserves, and a myriad of other articles, it was ruining Great Britain's sugar-producing colonies. For the purpose of saving her colonial sugars from this unfair competition in British markets, Great Britain forced the signing of the Brussels agreement in 1902, under the terms of which all bounty-paying, sugar-producing countries, except Russia, agreed to abolish their bounties in 1903. Since that time there has been but little change in the European sugar situation, and the people whom I met in Europe look for no material change in the European production of sugar in the near future.

Sugar production is increasing gradually in the sugar-exporting countries of Germany, Austria-Hungary, Belgium and the Netherlands, while the production in France has been falling away somewhat, presumably owing to the generally acknowledged fact that it costs about 5 francs more to purchase and treat a ton of beets in that country than it does in Germany.

## RUSSIA CONTINUES TO PAY BOUNTIES.

Russia, on the other hand, not being a party to the Brussels convention of 1902, has continued to pay bounties and has greatly increased her output of sugar, bringing it up to nearly a million and a half tons, thus placing her on a level with Austria-Hungary, the second largest beet-sugar producing country in the world. Russia is said to have a wonderfully rich sugar-beet soil, being very rich and very black, and hence it absorbs the utmost amount of the sun's rays. Should there be any great increase in European beet-sugar production, Russia with her rich soil and low wage rate, is expected to be found in the lead.

Of the non-exporting sugar-producing countries, Spain, since transferring her colonial problems from her shoulders to ours, in 1898, has built up a home beet-sugar industry, and now, instead of importing sugar, has a small surplus for export, and has joined, or is about to join, the Brussels convention.

Italy, during the past few years, has built up her beet-sugar industry from almost nothing to 150,000 tons, practically ceasing to be an importer, though she is not expected ever to become an exporter, and the same conditions prevail as to Sweden and largely as to Denmark.

Bulgaria and Roumania are regarded as promising countries for a further development to meet the requirements of home consumption.

Switzerland, on account of the mountainous character of the country, is regarded as out of the question, while Servia and Greece seem to be problematical.

## ENGLISH SUGAR POLICY.

Great Britain recently reduced her Boer war revenue tax on sugar for the reason that it was the most recent tax to be levied, and it was imposed with the distinct understanding that when her revenues permitted of a reduction in taxation this should be the first tax to be removed; and now that the government has a large surplus revenue, the duty has been cut from about 1 cent to one-half of 1 cent per pound. The tax was imposed purely as a revenue measure and not with a view of protection. No reduction is made by Great Britain in favor of her colonial sugars.

Of late there has been no little agitation looking to the establishment of the beet-sugar industry in the several British islands, with a view to the gradual employment of their vast hordes of unemployed. Prominent sugar importers, who admitted that they had been lifelong followers of Cobden and Adam Smith, told me that they were now firm advocates of establishing the industry in the British Isles for the purpose above mentioned. One of the principal drawbacks to establishing the industry in Great Britain has been the preponderance of large landed estates and farm renters with year-to-year leases, making it difficult or impossible for factory projectors to secure long-time contracts for beets. Lord Carrington, president of the British board of agriculture, informed me that last year he secured the passage through Parliament of a bill providing for the purchase of English estates by the government and subdividing and selling them off to farmers. He stated that under this bill he had purchased 100,000 acres during the past year, was now negotiating for a 25,000-acre tract, and expected to purchase at least 100,000 acres the coming

year, thus gradually getting the lands into small ownership by the farmers who till them.

The general impression which I heard expressed in England was that that country would be on a protective tariff basis within five years. Should this occur, and the cutting up of the lands continue, it is more than possible that the beet-sugar industry will become the leading agricultural industry of Great Britain, for it is claimed that the tonnage, sugar contents and purity of the beets grown there are higher than in any country on the continent, and she has cheap labor, fuel and supplies.

### NOTICEABLE CONDITIONS AND CHANGES IN THE EUROPEAN BEET SUGAR INDUSTRY.

The beet-sugar industry of Europe is undergoing several changes. Formerly the factories were mostly small affairs and produced only raw sugar, which was shipped to central refineries to be refined, thus saving the installation of much expensive machinery at the beet-sugar factory proper. The great expense of the machinery for the final preparation of the sugar for market will be appreciated when I tell you that one refinery I visited in Germany is compelled to prepare its sugar in 20 different styles and sizes of cut loaf, tablets, crushed, powdered, cubes, etc., in order to satisfy the varied demands of the trade, thus requiring 20 sets of special machinery.

With the sharp competition of recent years, many of the smaller factories have been torn down or dismantled and their machinery consolidated in large plants in order to reduce the cost of production, and the new plants being erected are all of large capacity. With this change in the trend of affairs, the large factories began to educate the people to use granulated sugar, so that with a comparatively small additional expense in machinery the trade could be supplied with a product ready for consumption without the intermediary work and expense of the refiner. In most of the countries I visited I learned that they were succeeding in their efforts, and in France, Germany and Belgium, at least, a goodly portion of the product of the beet-sugar factories is now white granulated sugar for direct consumption.

### SUGAR AS STOCK FOOD.

Another feature which has recently been inaugurated in Europe is the erection at a cost of $60,000 to $75,000 of quite a simple factory, which will extract 8 or 9 per cent. of the sugar, leaving the balance of it in the cossettes and molasses, to be prepared and used for stock food. These plants cost much less than plants equipped with machinery to extract the highest possible percentage of the sugar in the beet, and what value

they lose in sugar they claim to more than make up in the value of stock food. When Mr. Steffens first proposed the matter there he was laughed at, but it is claimed that each of the several factories so installed has proven to be successful. In Europe they secure a low price for sugar for export and pay a high price for imported stock food, and whether or not such plants as the above would be a success in the United States, where stock food is much cheaper than in Europe, is a question. It would be more likely to succeed in our New England and other eastern states, where stock food is high, than it would in the west, where stock food is much lower.

In some portions of Europe the farmers are so anxious to grow sugar beets that in order not to show favoritism the factories, after receiving all the offers of acreage, allot each farmer his percentage, as is done with an oversubscribed bond issue. This condition tends to avoid demands for higher prices for the factory's raw material.

### CULTIVATION METHODS IN EUROPEAN BEET FIELDS.

In some places it is still difficult to induce the peasant farmers to use machinery in the treatment of their crop, some even persisting in using a forked spade in digging out the beets. Nearly all extensive growers, however, use the most modern up-to-date machinery, including steam plows. Where land holdings are large, is in Hungary, these extensive growers contract to furnish all the way from a few hundred acres of beets up to as high as 3,000 acres, which was the largest acreage I learned of any one grower furnishing a factory. Two such growers to each American factory would have furnished us with more beets than all of our American factories sliced last year. These large growers raise beets largely for the indirect benefits secured by rotating beets with other crops and to secure the pulp to feed to their great herds of stock. If for their beets they secure anything like the direct cost of production, it is regarded as a paying proposition, though, of course, they get as high a price as possible.

Many of the factories are operated by large landed proprietors, who raise all kinds of agricultural products, run great herds of stock, operate dairies, flour mills which grind their wheat, and even breweries which work up their barley and hops, thus securing all the indirect advantages as well as the direct.

### A HUNGARIAN BEET FACTORY.

I visited one of the magnificent estates of Alexander and Joseph von Hatvany, located at Hatvan, Hungary. This magnificent 25,000-acre estate and its beautiful 120-room castle, now occupied by the Hatvanys, formerly belonged to the

favorite prime minister of Maria Teresa, who often sojourned there.

The estate is equipped with a sugar factory which was slicing 3,000 tons of beets per day, and is said to be the largest in Europe. The factory consumes the beets from 70,000 acres, many thousand of which are grown on the Hatvany property, while individual growers furnish the factory with as high as 3,000 acres of beets each, which were analyzing 18½ per cent. sugar.

The factory has been operated one hundred and eighty days in a season, about double the usual American campaign. This estate is also equipped with seven flour mills, which turn out 30,000 sacks of flour a day, with a brewery which uses up the barley produced, with 4,000 head of oxen and milch cows, with an extensive dairy, the milk being shipped to Budapest, and with an extensive system of narrow-gauge railway equipped with 600 cars.

## HOW HIGH GRADE BEET SEEDS ARE PRODUCED.

I visited sugar-beet farms and interviewed the growers of seeds, among them Mr. Vilmorin, of Vilmorin, Andrieux & Co., of Paris, established in the seventeenth century, the largest sugar-beet seed growers in France, and Messrs. Rabbethge and Geisecke, of Klein-Wanzleben, Germany, the largest growers of sugar-beet seed in the world, and the distinguished services of all three of these gentlemen in the interest of sugar have been recognized by their home governments. The sugar-beet seed industry has grown to immense proportions, but a description of either one of these farms would make a volume by itself. Sugar-beet land in this section of Germany is valued at 10,000 marks per hectare, or $1,000 an acre. The Klein-Wanzleben farm covers 4,000 acres, it takes 400 head of oxen to work it. tI is equipped with 60 miles of private railway, a 1,000-ton sugar factory, and a dozen or more buildings of huge dimensions for the preparation and storage of sugar beet seed. Some of the great buildings are four and five stories high and filled with cleaning machinery from top to bottom. The laboratories and seed-testing rooms are of such dimensions as to accommodate several hundred expert operatives, and are equipped with all the machinery and appliances that science has evolved. The library and museum is as large as would be found in a good-sized American city, and is filled with books and relics and appliances pertaining to the industry that are of inestimable value. It was here that before starting the rounds of the building and farms the room was darkened and by means of steropticon views they showed us what we were about to see. In their vaults they have a record and pedigree of every mother beet from

which they have furnished seed since the foundation of the firm, and they have photographs of every mother beet they have raised for nearly forty years. All these photographs and records are indexed and each can be referred to at a moment's notice. The same care and attention to the minutest detail of seed growing prevails at Vilmorin's farm, just outside Paris, where he has a beautiful chateau and resides during the summer.

Neither the sugar-beet seed growers nor other scientific men I met anticipate being able to materially increase the sugar contents of the beet. Without exception they feel that about the limit has been reached, and the sugar-beet seed growers are bringing every scientific effort to bear to raising the purity of the beet, in order that a greater proportion of the sugar in the beet may be rendered extractable.

## LOW WAGES IN EUROPE.

In France ordinary factory labor is paid from 3 francs to 3 francs 75 centimes per day, equal to 58 and 73 cents United States currency.

In one place in Germany they were paying as high as 2 marks (48 cents) per day for women and 2½ to 3 marks for men, or 60 to 72 cents per day. In another section they were paying their agricultural laborers, who worked in summer from 4 a. m. until 9 p. m., 1¾ marks (42 cents United States currency) per day for men, and 1 mark 10 pfennigs (26½ cents United States currency) for women. In addition to this these laborers were furnished with lodgings, with coffee three times a day, and with a nutritious dinner. I examined the lodgings, kitchens, lavatories, etc., which were furnished these laborers. The buildings were substantial, constructed of brick, with bare cement floors, but would hardly be considered attractive by the average American workman.

In Hungary factory wages run all the way from 40 to 60 cents United States currency per day.

In Austria the agricultural wage rate for women is as low as 12 to 15 cents United States currency per day, and for men 20 to 24 cents. Men, on piecework, working from 4 a. m. to 8 or 9 p. m., are able to earn from 60 to 70 cents per day.

Common labor in the factories is paid from 25 cents to 35 cents per day. Returning from Budapest to Vienna, I landed in a snowstorm, and the next morning many men were engaged by the city in shoveling snow. I learned that they were paid 2 kronen, or 41 cents United States currency, per day.

In order that you may compare the labor figures I have presented with those presented by Mr. Baird, I have tabulated Mr. Baird's figures, and append them herewith:

| | United States. | Germany. |
|---|---|---|
| General foremen, p month | $150.00 –$160.00 | $22.00 –$37.50 |
| Highly skilled labor at the vacuum pans, p. month | *a* 100.00 – 125.00 | *b* 18.00 – 22.00 |
| Beet-shed workmen, p. hr. | .20½ | .05 |
| Beet feeders, do. | .17½ | .05½ |
| At beet washers, do. | .17½– .22 | .05 |
| At the beet-cutters, do. | .20 – .25 | ..... ..... |
| Knife sharpeners, do. | .22½– .27½ | ..... ..... |
| Head men at the diffusion battery, p. hr. | .25 | .06 – .10 |
| Helpers at diffusion battery, do. | .20 | .04 |
| Under the diffusion battery, do. | .20 | .05 – .06 |
| Chief men at carbonation, do. | .25 | .05 |
| Filter-press foremen, do. | .25 | ..... ..... |
| Filter-press men, do. | .17½ | .04 |
| At the evaporators, do. | .25 | .04 2-5 |
| At the centrifugals, do. | .20 – .22½ | (*e*) |
| Cleaning Boilers, firing and stoking, head boiler man, p. hr. | .30 | ..... ..... |
| Firemen, do. | .25 | .06½ – .07 |
| Blacksmiths, do. | .40 | .06½ – .07½ |
| Boiler cleaners, do. | .20 | ..... ..... |

| | Austria. | France. |
|---|---|---|
| General foremen, per month | ..... | ..... |
| Highly skilled laborer at the vacuum pans, per month | *c* $18.00 | *d* $40.00 |
| Beet-shed workmen, per hour | .07 | ..... |
| Beet feeders, do. | .07 | ..... |
| At beet washers, do. | .05½ | ..... |
| At the beet cutters, do. | ..... | 0.08– .10 |
| Knife sharpeners, do. | ..... | .05 7-10 .10 |
| Head men at the diffusion battery, do. | $0.03– .05 | .09 .10 |
| Helpers at diffusion, do. | .04– .06 | .06 .07½ |
| Under the diffusion battery, do. | .04– .06 | .08 |
| Chief man at carbonation, do. | .05 | .08 |
| Filter-press foremen, do. | ..... | .08 |
| Filter-press men, do. | .05 | .07 |
| At the evaporators, do. | .05 4-5 | .08 |
| At the centrifugals, do. | ..... | ..... |
| Cleaning boilers, firing and stoking, head boilerman, per hour | .07 | .07 |
| Firemen, do. | ..... | ..... |
| Blacksmiths, do. | .07 | .08 |
| Boiler cleaners, do. | ..... | .06 |

*a* In general by the year.
*b* In general not by the year.
*c* Or $294 by the year.
*d* For three months and $10 extra for traveling expenses.
*e* Paid by the sack.

## COST OF BEET SUGAR PRODUCTION IN EUROPE.

Cost of production is a difficult thing to obtain in foreign countries, even under the most favorable circumstances, and I found it especially so in face of the publicity given to a letter from the state department to our foreign consuls, asking them to secure such information for the benefit of this honorable committee. Europeans seemed to think that it was about ask-

ing a prisoner to furnish the evidence on which to convict him.

The best specific evidence concerning its low cost of production in any one country is the figures of Otto Licht, compiled from the ruling daily prices on the Magdeburg Sugar Exchange, a most important institution, which fixes the market price of sugar in the very heart of the German sugar industry.

These figures show that in but one year since the Brussels convention has the Magdeburg price of sugar averaged above $1.97 per 100 pounds, and that with the exception of this one year, when abnormal conditions prevailed in the sugar world, the average price of sugar on the Magdeburg Sugar Exchange during the past six years has been $1.85 per 100 pounds.

If these prices did not compensate the manufacturers for the direct and indirect advantages they secured from the industry, it is a fair presumption that the industry would have lagged. The following figures are those of Licht in German marks per 100 kilos, to which I have added the figures per 100 pounds in United States currency:

| | Marks per 100 kilos. | U. S. Currency per 100 lbs. |
|---|---|---|
| 1901-2 | 15.76 | $1.71 |
| 1902-3 | 17.54 | 1.91 |
| 1903-4 | 17.38 | 1.89 |
| 1904-5 | 25.32 | 2.76 |
| 1905-6 | 16.22 | 1.77 |
| 1906-7 | 18.07 | 1.97 |

From sugar manufacturers I secured data for factories in different portions of Germany, which worked out a cost of production of $1.95, $2.11 and $1.98 per 100 pounds, respectively; in Belgium, $1.837; in Holland, $1.477 and $1.61; in Austria, $1.85; and in Russia, $2.355.

The larger of the above cost figures are those where the receipts from the sale of pulp molasses, lime cake, etc., were not given, and hence could not be deducted from the total expenses before dividing the expenses with the number of pounds of sugar produced. That this makes a very material difference in European cost of production is shown by the fact that in one case where I succeeded in obtaining the figures from the sale of by-products, the amount so received amounted to over 30 cents per 100 pounds on the sugar produced.

This factory ran a little over 65,000 tons of beets, made something over 22,000,000 pounds of sugar, and the total expense amounted to $396,066.50. Figuring on this basis, the cost of producing the sugar would be $1.79 per 100 pounds. The facts were, however, that the receipts from the sale of pulp, molasses, and other by-products amounted to $58,064.35, and first deducting this amount from the total exepnses, and then dividing the remainder by the pounds of sugar produced,

showed a cost of production of $1.477 per 100 pounds, a difference of 32.2 cents per 100 pounds.

COST OF BEET SUGAR PRODUCTION IN UNITED STATES.

The average cost of sugar beets in the United States last year was estimated at $5.75 per ton, and the figures of the Department of Agriculture showed an average extraction of 12.30 per cent., or 246 pounds per ton, thus making the extractable sugar in the beet cost $2.33 per 100 pounds before the beets are sliced.

It seems safe to conclude that the net cost of producing sugar in Europe is materially lower than the American beet-sugar factories are paying the farmers for the raw material. In fact, the farmers of the United States are receiving more money per pound of extractable sugar in their beets than the German sugar manufacturers are receiving for the finished product. It should not be concluded, however, that the people of Europe pay a less price per pound for the sugar they eat than do the people of the United States. On the contrary, owing to the levying of consumption taxes and other forms of internal taxation, the retail price of sugar throughout continental Europe is materially higher than it is in the United States.

GOVERNMENTAL INTEREST IN AGRICULTURE IN EUROPE.

In Europe the governments' intense interest in the tiller of the soil is not confined to sporadic efforts, but is constant. A failure of crops in any country of Europe would be a national calamity and the government sees to it that such a thing does not happen. In America the quality of the farmer's brains determine his success or failure. Our Department of Agriculture is doing heroic work. Innumerable experiments are made, and the results are conveyed to a goodly number of our farmers, and there the work might be said to cease. From that time on the farmer is left to himself, and whether or not he profits by this work concerns no one but the farmer himself. In Europe it is quite different. The reasonable presumption there is that unaided the peasant farmer can not produce as abundant crops as when aided by the skilled agriculturist, who sees to it that European lands are enriched by more brains and more fertilizer per acre than any other lands in the world.

Undoubtedly this continuity of effort and the results thereby obtained are best illustrated in their governmental work in connection with the production of beet sugar, which effort began in France and Germany over a century ago and has never ceased for a moment from that day to this.

## HOW SUGAR BEETS WERE DEVELOPED.

By governmental aid in the scientific breeding of sugar beet seed they have raised the purity of the beet, and have more than trebled its sugar contents. They have increased the size of the beet to such an extent that one acre now produces as many tons of beets as were formerly harvested from two acres.

They have assisted the mechanical engineers and machinery manufacturers in perfecting their processes of extraction, so that the rich beets of today, manipulated by modern machinery and methods, yield three times as much sugar per ton as they did a few decades ago.

They have taught the farmers how to rotate their other crops with sugar beets with such success that if the sugar beet were now removed and all the land put into other crops the entire acreage would not produce as much tonnage of other crops as is now produced in addition to their sugar beets.

The further result is that in addition to these vast indirect advantages Europe is saving two hundred and fifty to three hundred million dollars a year which she would otherwise have sent to the Tropics for sugar, in addition to drawing one hundred and fifty to two hundred millions a year in gold from other countries from the sale of the sugar she exports.

Nor have these efforts ceased. Farmers' meetings in country school-houses are still addressed by scientific agriculturists, who are teaching the farmers how to produce a greater and greater tonnage of sugar beets to the acre. Nor have they stopped the scientific work with the manufacturing end of the industry.

## DEVELOPMENT OF SUGAR MACHINERY AND APPARATUS.

At Berlin the government owns what is admitted to be the greatest sugar institute in the world. The immense four-story building occupied by this institute was erected for this particular purpose, and is equipped with every known scientific instrument and piece of machinery used in sugar work, including a complete working beet-sugar factory in miniature. The laboratories are marvels and the library is said to contain every standard work on sugar which has ever been published, as well as all the current sugar publications of the world and tens of thousands of sugar documents and pamphlets.

Dr. Alexander Herzfeld, one of the world's celebrated sugar chemists and experts, presides over this institution, assisted by a faculty composed of the ablest sugar experts in the Germen empire. In showing me through the building Dr. Herzfeld explained the workings of the institute. From one year's end to the other the most careful research work is conducted,

analyzing and testing first the different commercial varieties of sugar-beet seed and then sending it out to various factories, where it is planted on soils of different character, later noting the tonnage yield, and finally the sugar contents and purity, thus determining which particular seed will give the best results in each character of soil. They study manufacturing processes and have experimental machinery constructed with the view of still further perfecting the manufacturing end of the industry.

They analyze the coal, the coke, and the various other factory supplies used by German beet-sugar factories, and, as Dr. Herzfeld remarked, they had even analyzed the wine which the factory directors drank.

### HOW TRAINED EXPERTS ARE CREATED.

Students in this school take minor positions in the German sugar factories during the ninety-day campaign and then return to their technical studies. The graduates of this school know about all that is to be learned concerning the technical working of a sugar factory, and having graduated they fill the highest technical positions in the factories and in the fields, and secure marvelous results for the industry.

In Germany a young man knows that if he perfects himself in the art of sugar making his future is assured, that even though every other country in the world produces its own sugar, and thus cut off German exports, his country will still continue to produce all the sugar the German people consume; and hence young men of brains and intellect are always attracted to this industry, raising its scientific standard and bringing it closer and closer to the point where the science of the Temperate Zone can compete with the slave wage rates of the Tropics.

I asked a German official what would be the result if in following the policy already adopted in part by the United States —and now proposed by some to be more completely adopted— the German government should make such tariff concessions to its South African colonies or to weak but independent sugar-producing tropical countries as would enable them to produce sugar and ship it into Germany in competition with German beet sugar. Instantly he replied: "It would create a revolution and wreck the Empire. Such a thought is preposterous—not to be dreamed of for even a moment. A chancellor who would suggest such a thing would be mobbed within twenty-four hours."

With protective tariffs and bounties and cartels and sugar schools and lectures to the farmers on how to secure the best results, the fostering protection and care of that government to the sugar industry is real and substantial and both farmers and capitalists know what to expect.

ENORMOUS GROWTH OF SUGAR BEET BUSINESS IN GERMANY.

The growth of this industry and its influence on the world price and per capita consumption of sugar, perhaps, is illustrated best by its record in Germany, figures of which, compiled from the tables of Otto Licht, are given below.

Taking these figures of ten-year periods from 1835 to date, it is seen that at the earlier date they had 122 factories that produced an average of but 11 tons of sugar per annum per factory, while now they have 369 factories which produce an average of 6,026 tons of sugar per factory.

The tonnage of beets per acre during this period has been raised from 7.7 to 12.73; the extractable sugar from 122 pounds per ton of beets to 346 pounds; the area harvested from 3,250 acres of beets to 1,110,457 acres; and the sugar produced from 1,408 tons to 2,223,521.

During this period the annual taxes collected on sugar have risen from less than $4,000,000 a year to nearly thirty-four millions a year, and the per capita consumption has risen from 4.4 pounds to 41.18 pounds. During this period they have had much to do in revolutionizing the cost of production and the price of sugar, the Magdeburg price of which has dropped from $9.49 per 100 pounds in 1855 to $1.97 in 1907. Today the Magdeburg price of the 41 pounds of sugar the average German annually consumes is but a trifle greater than it was forty years ago for the 9½ pounds he then consumed.

## DEVELOPMENT OF THE GERMAN BEET SUGAR INDUSTRY, 1836-1907.

(All weights in metric tons of 2,204 pounds.)

| Year. | Number of factories. | Acres in beets. | Beets per acre. Tons. | Beets harvested. Tons. | Beets worked per factory. Tons. | Sugar. extraction. per cent. | Sugar produced per acre. Tons. | Sugar produced. Tons. |
|---|---|---|---|---|---|---|---|---|
| 1836-37 ..... | 122 | 3,250 | 7.70 | 25,346 | 208 | 5.55 | .431 | 1,408 |
| 1846-47 ..... | 107 | 31,750 | 8.82 | 281,692 | 2,633 | 7.14 | .632 | 20,121 |
| 1855-56 ..... | 216 | 114,700 | 9.50 | 1,091,990 | 5,056 | 8.00 | .760 | 87,359 |
| 1866-67 ..... | 296 | 242,025 | 10.46 | 2,535,635 | 8,566 | 7.93 | .829 | 201,241 |
| 1876-77 ..... | 328 | 352,185 | 10.06 | 3,550,037 | 10,823 | 8.15 | .820 | 289,423 |
| 1886-87 ..... | 401 | 692,222 | 11.88 | 8,306,671 | 20,715 | 12.18 | 1.45 | 1,012,968 |
| 1896-97 ..... | 399 | 1,062,202 | 12.89 | 13,721,601 | 34,390 | 13.38 | 1.72 | 1,836,536 |
| 1906-7 ..... | 369 | 1,110,457 | 12.73 | 14,171,666 | 38,406 | 15.69 | 1.99 | 2,223,521 |

| Year. | Sugar produced per factory, average Tons. | Sugar imported. Tons. | Sugar exported. Tons. | Sugar consumed. Tons. | Consumption of sugar per capita. Pounds. | Taxes and customs collected on sugar. | Magdeburg price of sugar per 100 pounds. |
|---|---|---|---|---|---|---|---|
| 1836-37 ..... | 11 | 51,527 | 2,230 | 50,705 | 4.4 | $ 3,710,129.04 | .... |
| 1846-47 ..... | 188 | 68,096 | 10,019 | 74,628 | 5.65 | 4,440,963.04 | .... |
| 1855-56 ..... | 404 | 46,703 | 9,545 | 116,568 | 7.81 | 5,775,310.08 | $9.4$ |
| 1866-67 ..... | 680 | 6,471 | 42,975 | 162,429 | 9.90 | 7,501,470.48 | 6.32 |
| 1876-77 ..... | 882 | 12,350 | 60,407 | 241,365 | 12.47 | 11,703,589.20 | 7.96 |
| 1886-87 ..... | 2,526 | 4,570 | 663,266 | 354,273 | 16.54 | 8,069,760.00 | 4.22 |
| 1896-97 ..... | 4,602 | 1,620 | 1,241,230 | 596,926 | 24.99 | 20,854,560.00 | 2.22 |
| 1906-7 ..... | 6,026 | 3,117 | 1,098,835 | 1,144,629 | 41.18 | * 33,980,880.00 | 1.97 |

* 1905-6; figures for 1906-7 not obtainable.

Though on account of its great indirect, as well as direct advantages, the sugar industry has received more governmental aid and attention in Europe than perhaps has any other, it is not by any means the only industry which receives the fostering care of the government.

For a nominal annual fee the farmer belongs to an agricultural society, one of whose experts visits his farm every thirty days and inspects his crops and his stock. If his pigs are not looking up to the sandard, or his cows are not giving enough milk, or the milk is poor, a veterinary is sent for forthwith, and if each and every crop is not up to standard, he is told what to do, and it is seen that he does it. It goes without saying that the system of rotation of crops is devised by the experts. This system of directing the farmers has reached its highest development in Germany, but it is in vogue to a greater or less degree all over Europe. The effects of it are very striking when the agricultural statistics of western European counries are compared to those of Russia and the United States. The following table for 1906, covering four leading cereal crops in five countries, illustrates the value of this character of work.

AVERAGE YIELD PER ACRE.

| | Wheat. Bushels. | Oats. Bushels. | Barley. Bushels. | Rye. Bushels. |
|---|---|---|---|---|
| United States | 13.8 | 30.1 | 25.5 | 15.7 |
| Germany | 28.0 | 47.4 | 33.5 | 24.2 |
| France | 19.8 | 27.3 | 22.4 | 16.7 |
| Austria | 17.8 | 27.2 | 22.9 | 17.6 |
| Hungary | 17.6 | 30.4 | 22.7 | 17.3 |
| Russia | 9.2 | 18.9 | 13.4 | 11.3 |

While it is an established fact that the cane-sugar industry is an industrial juggernaut which blights and crushes every other industry that lies in its path, it is equally well understood that the beet sugar industry is an aid to all other industries. On large areas in Germany they have demonstrated by scientific tests covering a period of fifteen years prior and subsequent to the introducion of beet culture, when one-fifth of the land was planted to sugar beets, that the remaining four-fifths of the area yielded 24 per cent. more wheat, 14.8 per cent. more rye, 25.2 per cent. more barley, 41.5 per cent. more oats, 86 per cent. more pease, and 702.3 per cent. more potatoes than was secured from the entire area before the introduction of the sugar beet as a rotating crop.

VALUE OF EUROPEAN METHODS.

The value in dollars and cents of Europe's methods of scientific farming is best illustrated in the production of two of our leading cereals, wheat and oats. The 1907 farm value of all the wheat and oats produced on the 77,000,000 acres devoted to those two crops amounted to $1,223,573,000. In the case of each of these

crops the average yield per acre in Germany in 1906 was exactly double what it was in the United States in 1907, and hence, had our farmers been as skillful as are the German farmers, in a single year they would have added nearly a billion and a quarter dollars to their income from these two products.

It thus would seem that the scientists of Europe have effectually squelched those who were wont to scoff at the so-called "worn out soils of Europe" when comparing them with our "virgin soils," and unless we succeed in teaching our farmers better methods of agriculture, the comparison will become more odious than it is now.

In Germany, France, and Austria-Hungary the same paternal spirit is shown in stock raising as in agriculture, and the farmers are being taugh that it is as cheap to produce good as poor stock.

### PRUSSIAN METHOD OF IMPROVING STOCK.

The Prussian government owns 4,200 stallions, one of which cost $150,000 and several of which cost $75,000 each. In the spring these government stallions are sent on their rounds through the country and their service is furnished at from 2 to 6 marks, a certificate of pedigree being furnished with the service. Individuals may own stallions, but can only use them for service if certified by the government officials, and the farmer accepting service from an uncertified stallion is subject to a heavy fine. The marked effect which this system has had in raising the character of stock in these countries is said to more than justify the establishment of it. Perhaps the best evidence of the value of this scientific method of breeding is seen in the German cavalry, acknowledged to be the best mounted cavalry in the world.

### EUROPEAN THEORY OF TAXATION AND POLITICAL ECONOMY.

European countries which formerly collected a large amount of revenue on sugar imports finally raised their customs duties high enough to induce their capitalists to erect beet sugar factories and produce their sugar at home, and thus become independent of tropical sugar. Then they imposed consumption taxes with which to replace the losses in customs duties, and today the eight principal sugar-producing countries of Europe secure over $188,000,000 of revenue per annum from consumption and other forms of sugar taxation, as is shown by the following table, which I have prepared for the consideration of this honorable committee:

SUGAR DUTIES COLLLECTED IN EUROPE AND THE U. S.

| Year. | Country. | Amount collected in Local Currency. | Equivalent in U. S. Currency. | Sugar Consumption per Capita, Pounds. |
|---|---|---|---|---|
| 1907 | Russia .....rubles.. | 101,467,263 | $ 52,255,640 | 18.28 |
| 1906-7 | Austria-Hung'y krones.. | †186,300,000 | 38,191,500 | 23.32 |
| 1906-7 | Germany .....marks.. | 146,326,700 | 35,118,408 | 40.37 |
| 1907 | France .....francs.. | 153,949,000 | 30,020,055 | 35.24 |
| 1906-7 | Italy .....lire.. | 75,618,929 | 14,745,691 | 7.85 |
| 1907 | Holland .....gulden.. | 24,300,000 | 9,902,250 | 39.84 |
| 1907 | Spain .....pesetas.. | 26,696,712 | 4,618,531 | 11.08 |
| 1907 | Belgium .....francs.. | 17,987,924 | 3,507,645 | 24.57 |
| Total | ..... | ..... | $188,359,720 | .... |
| 1907 | United States ..... | ..... | ‡60,135,181 | 82.60 |

| Year. | Country | Tax Collected per Pound of Consumed. | Tax Collected Per Capita. | Tax Collected per 82.6 Pounds of Sugar |
|---|---|---|---|---|
| 1907 | Russia .....rubles.. | $ .0218 | $ .40 | $1.80 |
| 1906-7 | Austria - Hung'y.krones.. | .0343 | .80 | 2.83 |
| 1906-7 | Germany .....marks.. | .0156 | .63 | 1.29 |
| 1907 | France .....francs.. | .0218 | .77 | 1.80 |
| 1906-7 | Italy .....lire.. | .0573 | .45 | 4.73 |
| 1907 | Holland .....gulden.. | .0466 | 1.86 | 3.85 |
| 1907 | Spain .....pesetas.. | .0207 | .23 | 1.71 |
| 1907 | Belgium .....francs.. | .0203 | .50 | 1.68 |
| Total | ..... | $ .0084 | $ .69 | $ .69 |

EUROPEANS ARE STATESMEN.

At least for Europe, the advantages of this policy are manifold. In the first place, the $188,000,000 annually collected in revenue from consumption and other forms of internal sugar taxes is a far greater amount than they collected on sugar imports. In the second place, their people pay less per pound for their sugar than they did before, or than they probably would now if the world depended exclusively on the Tropics for its sugar supply. In the third place, they keep at home from $250,000,000 to $300,000,000 which they would otherwise be compelled to send to the Tropics every year to purchase their sugar. In the fourth place, they annually draw from $150,000,000 to $200,000,000 from other countries in payment of the sugar they export. In the fifth place, they give employment to their people and their capital. In the sixth place, without increasing their cultivated area (which is impossible), they produce several hundred million dollars' worth

* Otto Licht.

† Estimated by Dr. Mikusch, Vienna.

‡ 1908 revenue collected, $49,984,995; figures on 1908 consumption not available.

of wheat, barley, flax and potatoes in excess of what they could possibly produce on the same acreage if they did not have the sugar beet to rotate with. This is what the Europeans call statesmanship and is the reason they have decorated most of the men who have distinguished themselves in the line of sugar production. Their theory is that, in any event, government revenues must be raised; that if they import all their sugar and collect an import duty on it of 2 cents per pound, it raises the price of sugar by that amount; that if, on the other hand, they foster the industry and produce their sugar at home and levy on it a consumption tax of 2 cents per pound, they collect the same amount of revenue, the consumer pays his government no more in taxes, and the countries are enriched by half a billion dollars a year, which compensates many times over the difference in cost between tropical and temperate zone sugar. It is quite in line with Lincoln's statement that "I don't know much about political economy, but I do know that when we purchase a ton of steel rails from Great Britain for a hundred dollars, we get the rails and Great Britain gets the money, and when we produce the rails from our own mines and in our own mills, we have both the money and the rails."

## THE DANGER POINTS IN THE SUGAR WORLD, AS SEEN BY EUROPEAN SUGAR MEN.

The authorities I met naturally were pleased at our comparative inaction relative to expanding our home beet sugar industry. They said that for a few years after the passage of the Dingley tariff bill they were alarmed at our rapid erection of factories, but that when the Spanish-American war terminated and we began to develop a colonial policy so different from what they say could possibly exist in any European country, their fear of the mainland industry ceased and their apprehension was transferred to Cuba and our colonial possessions.

Since the Dutch government enacted laws which prohibit the further expansion of the cane area in Java, Europe has ceased to worry about the future sugar output of that island.

## SUGAR IN HAWAII AND PORTO RICO.

They say they predicted the extermination by sugar of all other agricultural industries in Hawaii and Porto Rico, but that they fear neither of these islands, regarding 600,000 to 750,000 tons as the maximum capacity of each.

But they can't talk of either Cuba or the Philippines without using expletives. They feel that Cuba, with sufficient labor, is capable of producing anywhere from six to twelve million tons a year, and that the Philippines could easily produce as much more. They are expecting that if we make any further tariff concessions to Cuba, Cuba will find a way to coax the tobacco and other la-

borers onto the sugar plantations and go on doubling up her sugar crop, and that if we make any considerable concession to the Philippines, American and other exploiters will go in there and, with the aid of native and Japanese laborers, become a tremendous sugar-producing country in an incredibly short space of time, eventually forcing into the British market all duty-paid sugar, including that of Cuba, which now comes to United States ports.

### DANGER FROM FORMOSA.

The only other point they fear is Formosa, which is within 100 miles of, but not regarded as being as good a sugar country as the Philippines.

Formosa is ordering millions of dollars' worth of sugar-making machinery in Europe. One consulting sugar engineer told me that four of the largest German sugar-machinery houses had each advised him that they were swamped with work, each house stating that it had received the entire order for all the sugar-making machinery which the Japanese were putting into Formosa. He calculated that the Japanese had two reasons for misleading the machinery manufacturers—one because such a statement would secure them the lowest possible price for the machinery, the other that for a time it would conceal the magnitude of their operations.

### SUGAR PRODUCTION IN THE ORIENT, JAVA, AND THE PHILIPPINES.

I did not go to Europe with the expectation of learning anything of note about tropical sugar production. At every turn, however, I found people who were as thoroughly posted on the general tropical sugar situation as they were on their own temperate zone production of beet sugar, and at Amsterdam I had the pleasure of interviewing a world-renowned tropical sugar expert and authority, who had just returned after a seventeen years' residence in Java, next door to the Philippines.

In the latter eighties a serious blight struck the Java cane, and while its progress was slow, it was sure, and it threatened the total extinction of the sugar industry. In 1891 the Javan planters appealed to the mother country for aid, and Mr. H. C. Prinsen-Geerligs, already a noted scientist in the sugar world, was selected to go out to the island and try and save the industry. Mr. Geerligs went out and took charge of the experimental station, and largely through his efforts not only has the husbandry been saved, but it has been built up from a few hundred thousand tons to nearly a million and a quarter tons, making it the second largest tropical sugar-producing section in the world.

Mr. Geerligs talked freely, but modestly, of his great work in

Java. Perhaps all that will interest this honorable committee is contained in the following from my notes, which were made at the termination of the interview:

"They (the 177 Javan sugar planters, whose estates last year produced 1,210,197 tons of sugar) are all independent financially, but are all members of the Sugar Planters' Association and work together. Practically all of them live in Holland. They have all made money, but the people of the islands are just as poor as ever—30,000,000 natives, 60,000 Hollanders and half-castes. Thirty thousand Dutch and native soldiers in all the Dutch possessions.

WAGES IN JAVA.

Wage rate: Men, 6d.; Women, 2½d.; Boys, 2d., per day. Women and boys do only light work. Abundance of people. When planters want laborers they send criers through the towns and get all they want. Pay off every few days, and natives spend their money quickly. The country was occupied 1,200 years ago, but was given up later on. Ruins of most beautiful palaces are still there, but the natives deteriorated as soon as left to themselves. Every inch of ground now cultivated. One who had not been there in ten years would not recognize it. Far more generally cultivated than Holland and Belgium, yet believes that if left to themselves for ten years only rusty railroad tracks and ruins would indicate that civilization had ever been there.

PHILIPPINE POSSIBILITIES.

The Filipinos are practically the same race of people. Holland can not colonize Java; can merely hold it. The soil is very poor, far inferior to that of the Philippines, which is exceedingly rich. Largely by fertilization have doubled the sugar crop without greatly increasing the acreage. Use much ammonia and oil cake. Without any tariff favors Philippines can compete with the world in sugar production. In no event will the building up of the sugar industry benefit the people of the Philippines. The money will all go to absentee people of wealth. Java enjoys no tariff concession and asks for none. She has driven European sugar out of China, largely out of India, and partly out of Persia. At 1½ cents per pound Java can make 40 per cent. profit, and the Philippines can do much better with modern methods. Fears large production in Formosa. Java has good climate for sugar—always warm, but soil is very poor. Parties wanted him to go into a sugar enterprise in Porto Rico, but he declined, for reason that we had not settled Philippine matters, and that if we encouraged Philippines they would eventually ruin Porto Rican sugar industry, as well as home beet and cane and Hawaii."

To further show the standing of Mr. Geerligs, I reproduce the following from the London *Tropical Life* of May, 1908:

THE MANUFACTURE OF CANE SUGAR IN JAVA.

"As foreshadowed in our sketch of Mr. Prinsen-Geerligs in the October (1907) issue of Tropical Life, that well-known authority on sugar has published an important work on cane sugar manufacture, a book the contents of which have already made their mark in the sugar-producing world. That part of the book dealing with the chemical as well as the mechanical processes in the industry prove that they have been written by a man of great experience and high capacities. His work is of great value for the practical sugar manufacturer.

* * *

"When one compares these accounts with those to hand from a primitive center like India, he is either inclined to feel that the Indian cultivator is in an utterly hopeless state, or that the sooner an English Prinsen-Geerligs is discovered and sent to improve the cultivation and manufacture of sugar in India as 'P. G.' has done in Java the better for the financial position of our eastern empire.

* * *

"The present book runs into 450 pages, is beautifully printed, and bound in a strong, handsome cover, very attractive to the eye.

"Although constantly in correspondence with Mr. Geerligs on the subject, that gentleman, with his usual modesty, omitted to mention the following interesting function, particulars of which we owe to our contemporary, the *International Sugar Journal*, which reports that 'Mr. Prinsen-Geerligs, whose connection with the Javan sugar industry is about to terminate, has been the recipient of well-deserved honors at the hands of the syndicate of Java sugar planters, who have presented him with gold, silver and bronze medals in virtue of his distinguished services as a director of their experiment stations.'

"Everyone interested in sugar cultivation will agree with the International Sugar Journal that the honor, unique in its way, is well deserved.

"It will also please his English friends to learn that the Dutch Government has recently, as a proof of their appreciation of his services, appointed him an officer of the Orange Nassau Order. Meanwhile we are looking forward to the pleasure of a visit from Mr. Geerligs at an early date, as he is resigning his post in Java to take up his residence in Amsterdam as a consultant."

## COST OF SUGAR PRODUCTION IN THE PHILIPPINES.

Further evidence covering the cost of production in the Philippines under antiquated methods was contained in a statement of E. R. Luzuriaga, of Bacolod, Negros Occidental, P. I., and furnished the Senate Committee on the Philippines by Senator Hale. It is as follows:

"Senator Hale: I suppose you have seen the figures that he has made as to the cost of producing 100 pounds of sugar on his own plantation or farm or estate, and of six or eight others, as given by me. He states the cost upon his own was 69 cents per hundred pounds; in the next estate, 62 cents; in the next, 74; in the next, 74; in the next, 70; in the two later ones he names, 82 and 89; and the selling price of his own, as against 69, is $1.735; against 62, $1.59; against 74, $1.62; and against the other 74, $1.48; and against 70, $1.70, or a net profit per hundred pounds ranging from 64.76 to 99 per cent. * * *

### SUMMARY.

| Estate. | Acres. | Sugar. | Sugar per acre. |
|---|---|---|---|
| Commission Luzuriaga | 150 | 481,250 | 3,208 |
| Señor Juan Arineat | 37.5 | 191,125 | 5,096 |
| Señor Ramos | 187.5 | 440,000 | 2,346 |
| Señor Juan Cabanear | 1,500 | 5,500,000 | 3,666 |
| Average | 468.75 | 415,593 | 3,579 |

| | Cost per 100 lbs. | Selling price. | Profit per 100 lbs. | Per cent. profit. |
|---|---|---|---|---|
| Commissioner Luzuriaga | $ .694 | $1.735 | 1.041 | 130 |
| Señor Juan Arineat | .6218 | 1.59 | .769 | 155 |
| Señor Ramos | .743 | 1.62 | .976 | 131 |
| Señor Juan Cabanear | .743 | 1.487 | .744 | 100 |
| Señor Fredrico Inatti | .707<br>.82<br>.892 | 1.70 | .993 | 140 |
| Average | .744 | 1.625 | .944 | 135 |

If still further evidence were needed to corroborate these figures Mr. Geerligs' views concerning the Philippines, it is furnished by an article in the Manila Bulletin, of September, 1907.

The Bulletin states that in the Bais district of Negros, Señor Felix Montenegro and his brother-in-law, Señor Jose Bocanegra, large hacienderos, have each put in a Buffalo-Pitt steam plow, each of which at an expense of $10 a day does the work of 50 men and 100 carabao; that both plows are operated by natives, and each will take care of 625 acres. The Bulletin states that Montenegro had a worn-out cane field, which he had plowed seven times with a Chinese plow the preceding year and yet failed to

get a crop; that he plowed this field 14 inches deep with his steam plow; that he had worked his cane through his primitive mill, which was 22 years old, but "is still in serviceable condition," and in which he "estimates that he loses easily 20 per cent. of his sugar in the milling," and yet with this antiquated mill his yield from the "worn-out" land, which would produce nothing when plowed seven times in the customary Philippine manner, was 11,619 pounds, or over 5½ tons of sugar per acre. The Bulletin states that the soil is 12 feet deep and that it is in such good condition that Montenegro has replanted it to cane without replowing. The Bulletin states that the wage rate is from 10 to 12 pesos per month, or from 19 to 23 cents per day. Señor Montenegro estimates his loss of juice at 20 per cent. in the grinding, and there is a further average loss in the Philippines of 35 per cent. in the boiling, and yet Señor Montenegro marketed 11,619 pounds of sugar per acre from so-called "worn-out" soil that presumably, like the other sugar lands of the Philippines, has been constantly in cane for thirty to forty years without a particle of fertilizer ever having been applied to it.

### JAVA AND THE PHILIPPINES COMPARED.

After nearly twenty years of the most scientific work in Java, under a Prinsen-Geerligs, with the use of vast quantities of expensive fertilizers, the most modern and scientifically conducted mills in the world, they have been able to bring the Javan production up to 9,477 pounds of sugar per acre, or 81 per cent. of what they are able to get in the Philippines simply by steam plowing, with no science, no fertilization, and a process that loses 20 per cent. of the juice in extraction and 35 per cent. in the boiling. Mr. Geerligs said that at 1½ cents per pound the Javan sugar planters could make 40 per cent., and that the Philippines with their rich soils could produce much more cheaply, which statement would seem to be fully confirmed by Señor Montenegro's simple and comparatively inexpensive method of installing a $5,000 Buffalo-Pitt steam plow and without the installation of a modern mill.

The question might well be asked why capital has not gone into the Philippines and developed the industry if there they can produce sugar so cheaply. It might be answered by asking why it did not go into Java long ago, instead of waiting until a comparatively recent date, even though the Dutch maintained a stable government in Java, which Spain did not do in the Philippines, while since American occupation their future tariff relations with the United States have not been determined and capital is a very timid article. Throw open our doors to Philippine sugar and the question will be asked no longer. Under such conditions it would not take a Prinsen-Geerligs to flood the world with oriental sugar.

It will be seen from the following table that with all his skill

and expensive fertilizers and sugar machinery Mr. Prinsen-Geerligs has been able to bring the yield of 10 of the 177 Java sugar estates up to a point approximating what Señor Montenegro has done on the "worn-out" sugar lands of the Philippines with neither skill, fertilizers, or a modern sugar mill:

JAVAN SUGAR STATISTICS.

| Year. | Sugar Production Metric Tons. | Number of Estates. | Acres in Cane. | Maximum Yield of Sugar per Acre. Long Tons. | No. of Estates Making More Than 5 Tons per Acre. |
|---|---|---|---|---|---|
| 1893 ..... | 479,660 | ... | ..... | ... | .. |
| 1894 ..... | 484,260 | ... | ..... | ... | .. |
| 1895 ..... | 537,690 | ... | ..... | ... | .. |
| 1896 ..... | 490,061 | ... | ..... | ... | .. |
| 1897 ..... | 548,611 | ... | ..... | ... | .. |
| 1898 ..... | 725,030 | 188 | 198,500 | 5.1 | 1 |
| 1899 ..... | 762,447 | 183 | 206,440 | 5.7 | 2 |
| 1900 ..... | 744,257 | 183 | 224,100 | 5.2 | 1 |
| 1901 ..... | 803,735 | 182 | 242,100 | 5.0 | 0 |
| 1902 ..... | 897,130 | 183 | 256,000 | 5.3 | 1 |
| 1903 ..... | 952,307 | 178 | 249,000 | 5.8 | 7 |
| 1904 ..... | 1,055,043 | 176 | 259,000 | 5.18 | 9 |
| 1905 ..... | 1,039,178 | 173 | 260,490 | 5.10 | 7 |
| 1906 ..... | 1,067,798 | 176 | 272,970 | 4.19 | 0 |
| 1907 ..... | 1,210,197 | 176 | 285,017 | 5.15 | 10 |
| 1908 ..... | ..... | 177 | 285,289 | ... | .. |

Note.—1903-1907 figures from Summary of Commerce and Finance, January, 1908, pp. 2640-2741. Figures 1893 to 1898 prepared by H. C. Prinsen-Geerligs.

SUGAR PRODUCTION AS AFFECTED BY THE COLONIAL POLICIES OF EUROPE AND THE UNITED STATES.

With the sole exception of France, no European country, not excepting Great Britain, gives preferential treatment to colonial sugars when arriving at the customs houses of the mother country, and the French sugar manufacturers are not afraid of sugar exploitation in the French colonies. As one French beet sugar manufacturer put it to me:

"Colonial sugar comes to Marseilles and Bordeaux, far removed from any beet sugar factory, where it is refined. We are not afraid of French colonial sugar competition. The French government would not permit the exploitation of the sugar industry of its colonies, to the great detriment of the home industry. French capitalists recognize this fact and stay out of it. The owners of those colonial sugar estates are mostly niggers. They are lazy, and not provident or enterprising. In a good year they make a lot of money and spend double what they make. the next year they go in debt."

With the exception of Holland, all European sugar-producing countries maintain a sufficiently high import duty on sugar to protect the home industry from competition with tropical cane

sugar, and Holland deftly imposes such restrictions on the refining of sugar as to prevent absolutely the refining of cane sugar within the kingdom. Holland capitalists residing in the mother country have invested between one and two hundred million dollars in the sugar industry of the island of Java, a Dutch colonial possession, which now produces nearly a million and a quarter tons of sugar annually. Not only is Javan sugar not exempt from these prohibitive restrictions on the refining of cane sugar, but the restrictions were devised and executed for the express purpose of preventing Dutch capitalists from exploiting a Dutch colony with Dutch money, to the detriment of Dutch farmers and Dutch capitalists, who were producing sugar in the mother country.

Nor was this all. In order to prevent the further exploitation of the Javan sugar industry, which was gradually eliminating the rice fields of the natives, and by overproduction and consequent lowering of the world price for sugar was threatening to injure the Dutch exportations of home-produced sugar, the Dutch government has enacted laws which prohibit the further expansion of cane fields in the Dutch colony of Java.

It thus appears that European statesmen are a unit in the purpose to prevent the exploitation of the tropical sugar industry, whether it be to the detriment of their customs revenues or of their home sugar industry, and French, English, German, Belgian and Dutch capitalists are effectually prevented from exploiting it under the flags of their own countries.

## GIVES HAWAII A SLAM.

But while Europe has been discouraging and preventing its citizens from this work, at great cost to our revenues and to our industries, we have been providing fruitful fields for the investment of this medley of expatriated capital. We invited them to join our band of expatriated American capital in Hawaii, and with imported contract coolie labor of the lowest type exploit the cane sugar industry of those islands and crush out all other industries. Their sugar was given free admittance to our markets, and from 1876 to 1905 we made them all rich by giving them over $150,000,000 of the people's money, which would otherwise have been collected on the sugar they sent us free of duty. At the present time their already bursting wallets are being replenished by the American people to the extent of $17,000,000 a year.

We invited another cluster of French, Belgian, English, and German capitalists to join with us in crushing out the small sugar and coffee planters of Porto Rico and exploit the island with modern cane sugar mills. Just what was predicted has come to pass. The native planters are landless, their mills have been abandoned and are going to rust, they are employed at low wage rates by the exploiters, and the American people are footing the bills at the rate of nearly $8,000,000 a year.

We invited a still larger cluster of this medley of foreigners

to join a similar class of Americans in exploiting the sugar industry of Cuba. They responded with alacrity and it now takes over $10,000,000 a year of the people's money to satisfy them, and still they are not satisfied, but are clamoring for more.

AMERICANS WHO DEVELOP FOREIGN TRADE ARE "EXPLOITERS."

Altogether the tidy sum the American people hand over to this bevy of exploiters of expatriated capital amounts to $35,000,000 annually, and is equal to one-half the value of all the merchandise we sell the people of those islands, while the exploiters market their products with us to the value of four times the amount of their gratuity.

These exploiters sold us the bulk of the more than five and one-half billion pounds of sugar we imported in 1907, most of which otherwise would have been produced on American farms, and, at 3½ cents per pound for beets and labor, would have placed $200,000,000 in the pockets of our farmers and laboring men.

Based on the average yield and value of wheat per acre raised in the United States during the past ten years, the average amount of sugar raised per acre on American beet sugar farms in 1907, and taking 2¼ cents per pound as the average foreign and freight cost of the sugar imported in 1907, it shows that in exchanging domestic wheat for imported sugar it took all the money we received for all the wheat we raised on over 13,000,000 acres to purchase the sugar we could have produced at home on less than two and one-quarter million acres.

To pay foreign exploiters a cash bonus of $35,000,000 a year, thereby depriving our farmers and laborers of $200,000,000 a year, and compel our farmers to cultivate 13 acres in order to earn as much money as they could otherwise earn in two and one-quarter acres, thereby tilling 10,750,000 extra acres without additional recompense, virtually losing the use of that vast and valuavle area, would not seem to be in harmony with sound political economy.

CUBAN RECIPROCITY TREATY RESPONSIBLE FOR EUROPEAN DISCRIMINATION AGAINST OUR EXPORTS.

I failed to discover any sentiment in the European sugar world which was antagonistic to our home beet sugar industry. They seem to regard the production of beet sugar by a temperate-zone country as a heritage fraught with such marvelous economic results that it would be presumptuous to a degree for any nation to feel ill tempered because another nation established such laws as would enable it to produce its sugar at home. If we placed the duty on sugar at 10 cents or even $1 a pound, there would never be a murmur from Europe. What they do object to is to have a

nation of which they are amongst its very best customers, after having created a reasonable tariff on sugar—one of their important exports—proceed to make concessions from that tariff to tropical countries which can produce sugar more cheaply than they can in Europe, and still charge Europeans full tariff rates, thereby excluding their sugars from our markets, except when, as at the present time, the world's surplus of sugar is small. They do not consider this a "square deal" in any sense of the word, and see, or affect to see, no possible justification for it. Most of them have resented it by striking back at us on our principal exports, notably on our meat products, and it would appear that, however we may fix the tariff, they will continue to find ways to strike back, if not openly, then secretly, as long as we discriminate against her export sugar.

Both before going abroad and while abroad I was credibly informed by high sources that the fundamental cause of our recent tariff troubles with Germany was the Cuban reciprocity treaty, by which the sugar of our second best customer was excluded from our markets for the benetfi of a country which buys but little from us.

WHY THE U. S. DOES NOT PRODUCE ITS OWN SUGAR.

Nearly everywhere I went in the sugar districts of Europe our consuls seemed to be mystified at our not producing our sugar at home. They note the wonderful results produced all about them by the beet sugar industry, and wonder that we are not building scores of new factories every year instead of seeming to coax the tropics to produce it for us. One of our veteran and most distinguished consuls, a thinker and a political economist of note,, a man who loves the soil and appreciates the value of agriculture, looked over my letters of introduction and in a gruff voice greeted me with the remark: "Well, why in h—— don't you produce your own sugar?" He had studied the agricultural side of the question carefully, had seen that we produced a fair tonnage of good beets, and was inclined to blame the American sugar men for not availing themselves of the opportunity to produce the $100,000,000 worth of sugar we annually import. I will not deny the fact that on behalf of the industry I disclaimed any responsibility for such a condition of affairs, and that I laid the blame for it at the doors of Congress, and primarily at the door of this honorable committee, without whose initiative and aid we would have made no Cuban reciprocity treaty and had no continued Philippine free trade agitation. I told him frankly that the Cuban treaty agitation at its very inception blocked the erection of 86 projected new American beet sugar plants, in which there was to have been invested $49,000,000, and which alone would have produced several hundred thousand tons of sugar a year, and that as a direct result of that treaty a like

amount of American capital had gone into new Cuban sugar factories, and that these new Cuban factories were now supplying us with the sugar we had been preparing to produce in new American factories. I will not quote the gentleman's comments, which were forceful, if not elegant.

After calling at one of our embassies, I made the following notes:

"He is very much interested in our sugar industry, has observed its great economic advantages in Europe, and wonders why we do not adopt a fixed policy which will result in our producing all our sugar at home. Says a further reduction to Cuba or the Philippines, especially Cuba, would make the people over here furious and immediately result in their exclusion of our meats as the best means of hitting back at us. Says they have already largely excluded it and they would finish the job."

Naturally most of our consuls abroad are cautious when expressing themselves on a subject which is constantly before the legislative branch of our government and in which the executive branch seems to be deeply interested. It is evident, however, that their views on the subject are in accord with those of the governments of Europe, which would be unable to weather the storm if in any way they injured or retarded the development of agrarian interests, which in the parliaments of Europe are becoming stronger and stronger with each succeeding year.

## ATKINS, SPRECKELS AND STILLMAN WOULD CRUSH AMERICAN BEET PRODUCERS.

Eleven years ago the people who advocated the establishment of the beet sugar industry in America were laughed at by their enemies, who claimed that the sugar beet was an exotic, a hothouse plant, which could never be made to yield sugar at a reasonable price in the United States. I now see that Messrs. Atkins, Spreckels, and Stillman are contending for further tariff concessions, on the alleged ground that American beet sugar can be laid down in Chicago for very much less money than they can lay down tropical cane sugar at the same point. Their present argument is as fallacious as their former one has proven to be, as I will show elsewhere. Their reason for desiring a change in the tariff on sugar is plainly stated on page 432 of the hearing:

Mr. Fordney: A complete cessation of the production of either cane or beet sugar in this country then would increase your business as refiners?

Mr. Stillman: Yes, sir.

Mr. Fordney: And that is why you would like to have the difference in the tariff?

Mr. Stillman: That is why. I would like to increase our business.

There are those who would have us believe we can let in a half

million tons of Philippine sugar without its costing the American people a penny, without reducing the price of sugar, and thus without injury to the home sugar manufacturers, and with great benefit to the struggling Filipino planter. We let in a few hundred thousand tons of Porto Rican sugar, with the result that the mills of the struggling Porto Rican sugar planters are all abandoned—supplanted by the modern mills of rich alien owners, who spend their money in other lands. Supplanting 500,000 tons of full duty-paid sugar with a like amount of free tropical sugar depletes our national revenues by $16,500,000 a year, and that it injures the American producer already has been shown to this committee.

THE FREE TRADE HERESY.

Gentlemen who have appeared before this honorable committee and presented specious arguments in favor of reducing the duty on sugar contend that one section of the United States could produce beet sugar at a very low cost and could stand a lower rate of duty, and that the sections not so favorably situated should abandon the industry and move and concentrate their factories at the point of cheapest production. This is but an echo of the old free-trade heresy of buying in the cheapest market and selling in the dearest. Furthermore, it is economically wrong. Carried out to its logical conclusion, this principle would give us a wheat state, a corn state, an oats state, a cotton state, an apple state, a peach state, and all sorts of specialized states; and when the drought struck Dakota we would go without bread, and when the grasshoppers struck Kansas our stock would starve for lack of corn, and when the frost struck Maryland we would go without peaches, and when the boll weevil struck Texas we would go without clothes, and when a hailstorm swept over Colorado we would go without sugar. There would not be a year but what we would be compelled to go without some commodity we need for our well-being, and the science of rotation, the greatest in agriculture, would be a thing of the past.

REFINERS GET THE FULL BENEFIT OF CUBAN DUTY REDUCTION.

While the concession to Cuba was under consideration in 1902 and 1903 the opponents of the concession contended before this honorable committee that the purchasers of the sugar, and not the planters, would be the main beneficiaries if you granted the concession asked for.

On November 17 last Mr. Spreckels admitted to you that there are times when "we get the full benefit of the reduction of the tariff, about 35 cents a hundred pounds."

The terms of the Brussels agreement provide that where the aid or bounty or favors granted to the producers of sugar exceed

2½ francs, or about 50 cents per hundred pounds, such sugar will be excluded from the markets of the signatory powers; and not having exceeded that amount in our 20 per cent. concession to Cuba and 25 per cent. concession to the Philippines, the markets of the world are still open to those sugars; in fact, some of the former and the bulk of the latter is now marketed in world markets outside of the United States.

Further concessions to these sugars would undoubtedly close all other markets to them, thus compelling their sale in our markets; and if under present conditions, as Mr. Spreckels asserts, there are times when he can absorb the entire concession, it does not require much acumen to make an accurate guess as to what would happen to the Cuban and Philippine planters when all other markets were closed to their sugar.

SUGAR AND RESOLUTIONS.

The fact has been reasonably well established that sugar has been responsible for many revolutions in the tropics, and it would appear from a testimony before this honorable committee that the danger of a repetition of such revolutions is not entirely behind us. In the past these revolutions have sometimes been successful, as in the case of Hawaii; sometimes partially successful, as in the case of Cuba; and sometimes they have met with ignominous failure as in the case of Santo Domingo. In a plea for further reduction of tariff on Cuban sugars, this honorable committee has been told that:

As long as the island is prosperous and under some form of United States control, a republican government may be maintained; but should her great sugar industry be made unprofitable, either by cancellation of the treaty or by long continuance of the present high duty against her sugar, revolution, fed by her unemployed, is sure to result in the future as it has under similar circumstances in the past.

You have also been told that these revolutions—

Will be repeated unless the Cubans can govern themselves and maintain order and protect the lives of Englishmen and Germans and Frenchmen and Spaniards on the island and protect their property.

MORE GRIEVANCES AGAINST HAWAII.

This foreign capital in the sugar industry of Cuba, as well as in Hawaii and Porto Rico, is there because the home governments of the owners of it have prohibited its use under their own flag, to the detriment of their home sugar industry. These exploiters are regarded as a menace to the interests of their native countries, by whom they are treated with scant courtesy and less consideration. They join a similar class of Americans, and force tariff concessions from us which injure and stop the development of our home industries, and they wave before you the

flag of revolution and bloodshed, which flag they predict will be carried into Cuba if you do not consent to further injure or destroy our home industries for their special benefit.

The worst that could happen if you accede to the demands of this expatriated capital would be the blotting out of the already enormous investment in beet sugar factories and the taking from our people their richest agricultural and industrial heritage, which is theirs by right. Furthermore, if such a policy were adopted and adhered to, it would work a great hardship on 150,000 sugar beet raisers, it would blight the growth of many of our far western states, and it would rob our $40,000,000 worth of reclamation work of its greatest asset.

Already you have clipped the wings of the beet sugar industry by stopping further development. Where formerly from four to eleven new factories were erected in a season, we now have no more factories than we had in 1906, and yet the production of sugar from American-grown beets has increased from 312,000 tons in 1905 to 463,000 tons in 1907, showing that as they become familiar with the industry our farmers are more and more anxious to engage in it:

BEET SUGAR HAS "MADE GOOD" IN THE U. S.

The beet sugar industry has "made good." The promises you made in 1896 have resulted in this 1,100 per cent. increase of production in eleven years. What capital now needs is a reiteration of the assurances made in 1896 and 1900, when the dominant party proclaimed that instead of coaxing the tropics to produce our sugar we were going to produce it by American labor on American farms and in American mills.

For, the purpose of arresting your attention and inviting your most serious reflections on this important subject, I have laid before you the opinions of some of the ablest thinkers in the world, and surely the ablest men who have studied the sugar problems. I have given you the opinions of the greatest political economists on sugar in the world, the greatest sugar chemists in the world, the greatest sugar engineers in the world, the greatest sugar beet-seed growers in the world, the most extensive growers of beets in the world, the greatest producers of beet sugar in the world, the largest sugar brokers in the world, the most renowned editors of sugar journals in the world, as well as the opinions of European officials and government repreentatives, and some of our most distinguished representatives abroad. Could their views be summed up in one sentence it would be that you can't well ride two horses going in opposite directions, and that if the maintenance and expansion of the home sugar industry be of concern to this honorable committee, and I believe it is, you will be inviting disaster if you tamper with the present sugar schedule, under which the home industry has shown its greatest development.